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Marks et al.

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(54) **METHOD AND APPARATUS FOR SELECTIVE VISUAL FORMATTING OF AN ELECTRONIC DOCUMENT USING A STYLE ELEMENT LOCK STATUS**

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(73) Assignee: **Workiva Inc.**, Ames, IA (US)

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(21) Appl. No.: **14/451,173**

(22) Filed: **Aug. 4, 2014**

Related U.S. Application Data

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(51) **Int. Cl.**

G06F 17/00	(2006.01)
G06F 17/21	(2006.01)
G06F 3/0484	(2013.01)

(52) **U.S. Cl.**
CPC ***G06F 17/212*** (2013.01); ***G06F 3/04842*** (2013.01); ***G06F 3/04847*** (2013.01); ***G06F 17/211*** (2013.01)

(58) **Field of Classification Search**
CPC . G06F 17/211; G06F 17/212; G06F 3/04847; G06F 3/04842
USPC 715/255, 235
See application file for complete search history.

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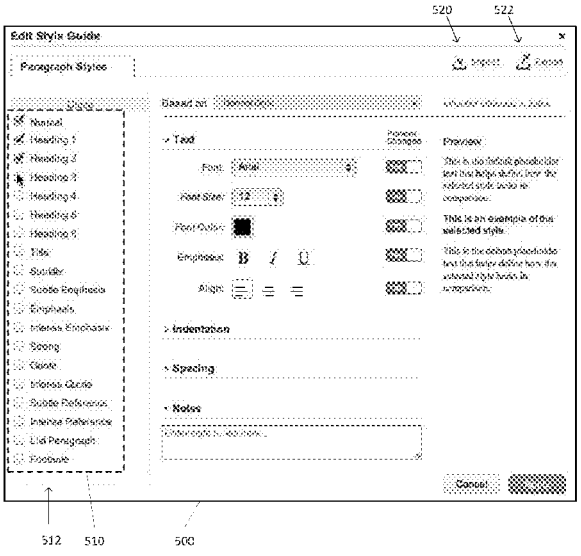
(57) **ABSTRACT**

A method for managing display of electronic documents is described. A user interface is generated for a visual style set of visual styles that affect display of electronic document content. A visual style of the visual style set comprises a style element set of style elements. A lock status for a style element of the style element set is received via the user interface. The lock status indicates whether the style element is editable or non-editable by a user of an electronic document associated with the visual style set. The visual style set is stored with the lock status for the style element.

20 Claims, 19 Drawing Sheets



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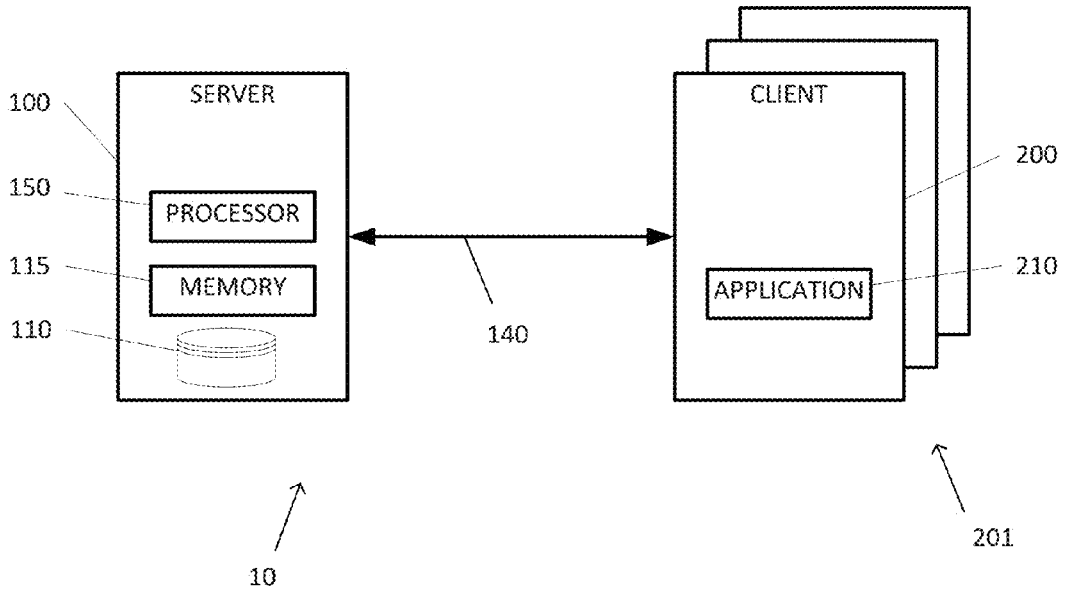

SERVER
100
150
PROCESSOR
115
MEMORY
110
140
CLIENT
200
210
APPLICATION
10
201

FIG. 1

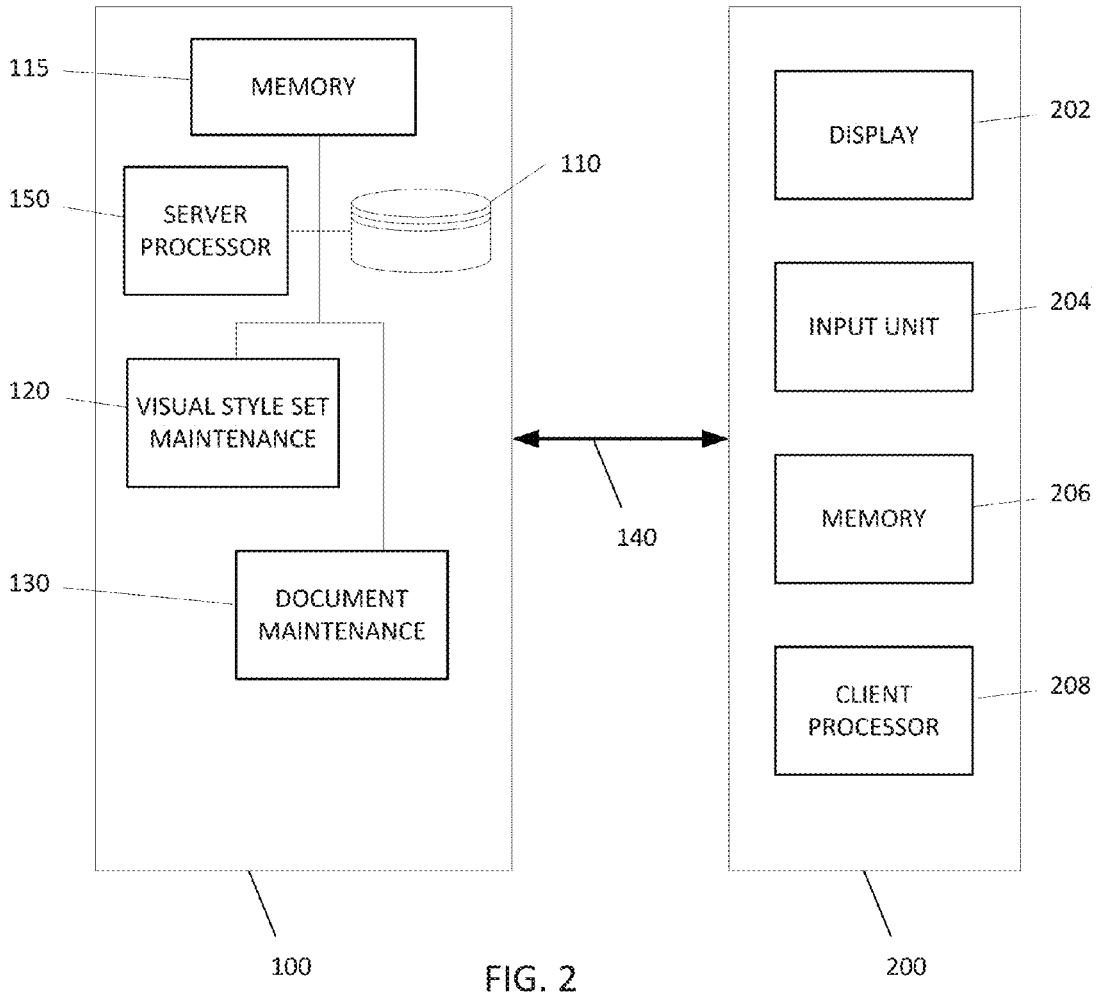

115
MEMORY
150
SERVER PROCESSOR
110
120
VISUAL STYLE SET MAINTENANCE
130
DOCUMENT MAINTENANCE
140
DISPLAY
202
INPUT UNIT
204
MEMORY
206
CLIENT PROCESSOR
208
100
200

FIG. 2

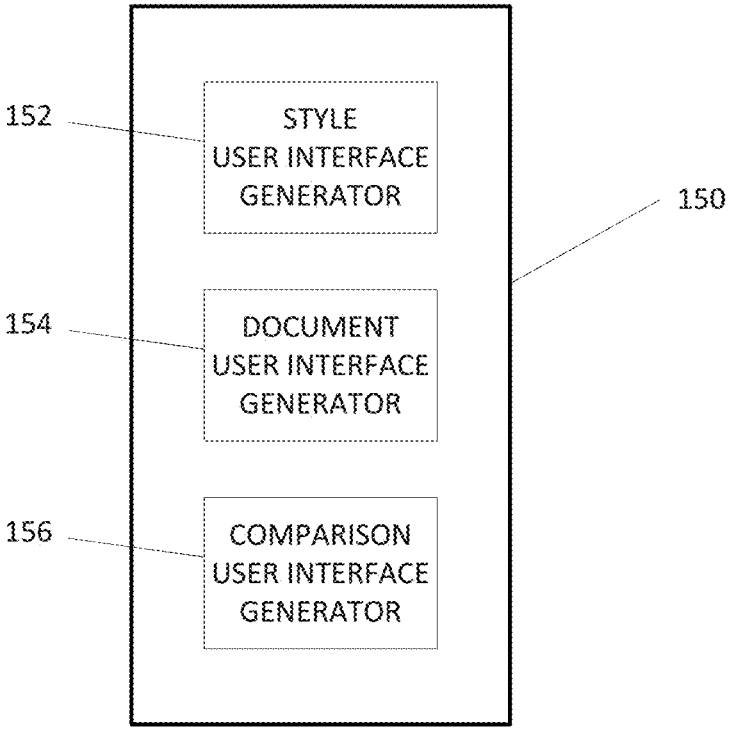

152
STYLE USER INTERFACE GENERATOR
150
154
DOCUMENT USER INTERFACE GENERATOR
156
COMPARISON USER INTERFACE GENERATOR

FIG. 3

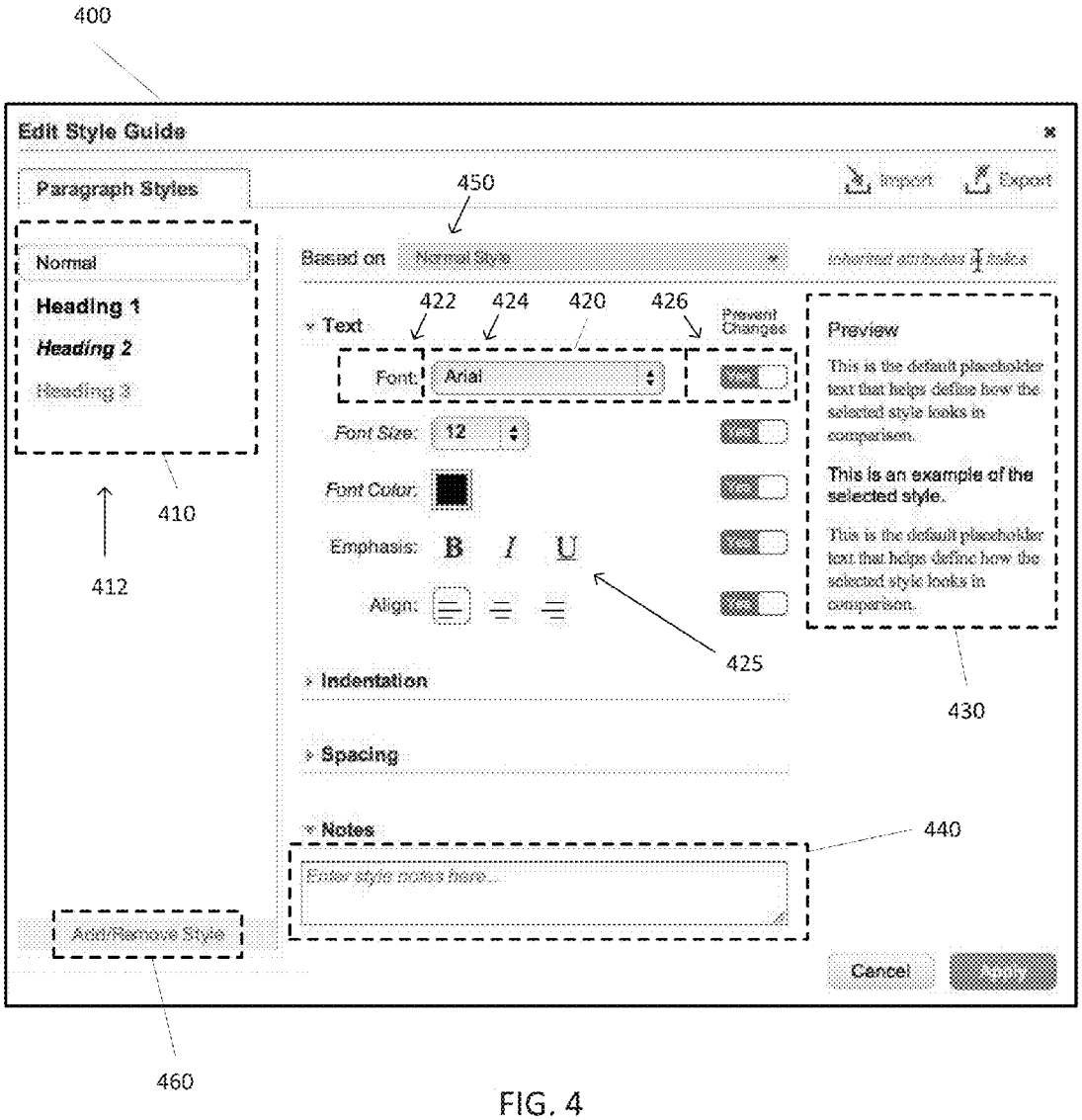

400
Edit Style Guide
Paragraph Styles
450
Import
Export
Normal
Heading 1
Heading 2
Heading 3
Based on
Normal Style
Inherited attributes
Text
422
424
420
426
Prevent Changes
Font:
Arial
Font Size:
12
Font Color:
Emphasis:
Align:
Preview
This is the default placeholder text that helps define how the selected style looks in comparison.
This is an example of the selected style.
This is the default placeholder text that helps define how the selected style looks in comparison.
410
412
425
430
Indentation
Spacing
Notes
440
Enter style notes here...
Add/Remove Style
Cancel
460

FIG. 4

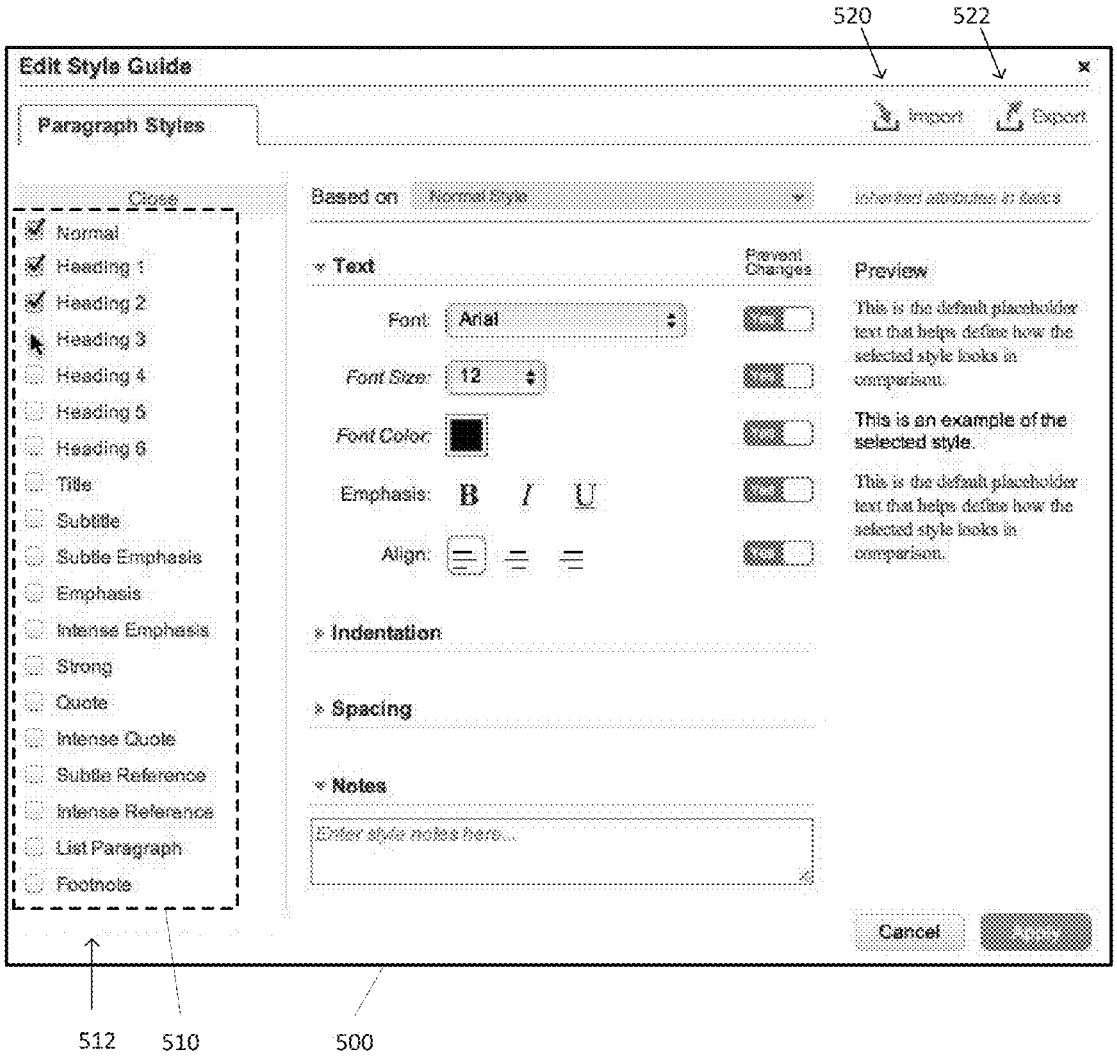

520
522
Edit Style Guide
Paragraph Styles
Import
Export
Clear
Normal
Heading 1
Heading 2
Heading 3
Heading 4
Heading 5
Heading 6
Title
Subtitle
Subtle Emphasis
Emphasis
Intense Emphasis
Strong
Quote
Intense Quote
Subtle Reference
Intense Reference
List Paragraph
Footnote
Based on
Text
Prevent Changes
Font:
Arial
Font Size:
12
Font Color:
Emphasis:
Align:
Indentation
Spacing
Notes
Preview
This is an example of the selected style.
Cancel
512
510
500

FIG. 5

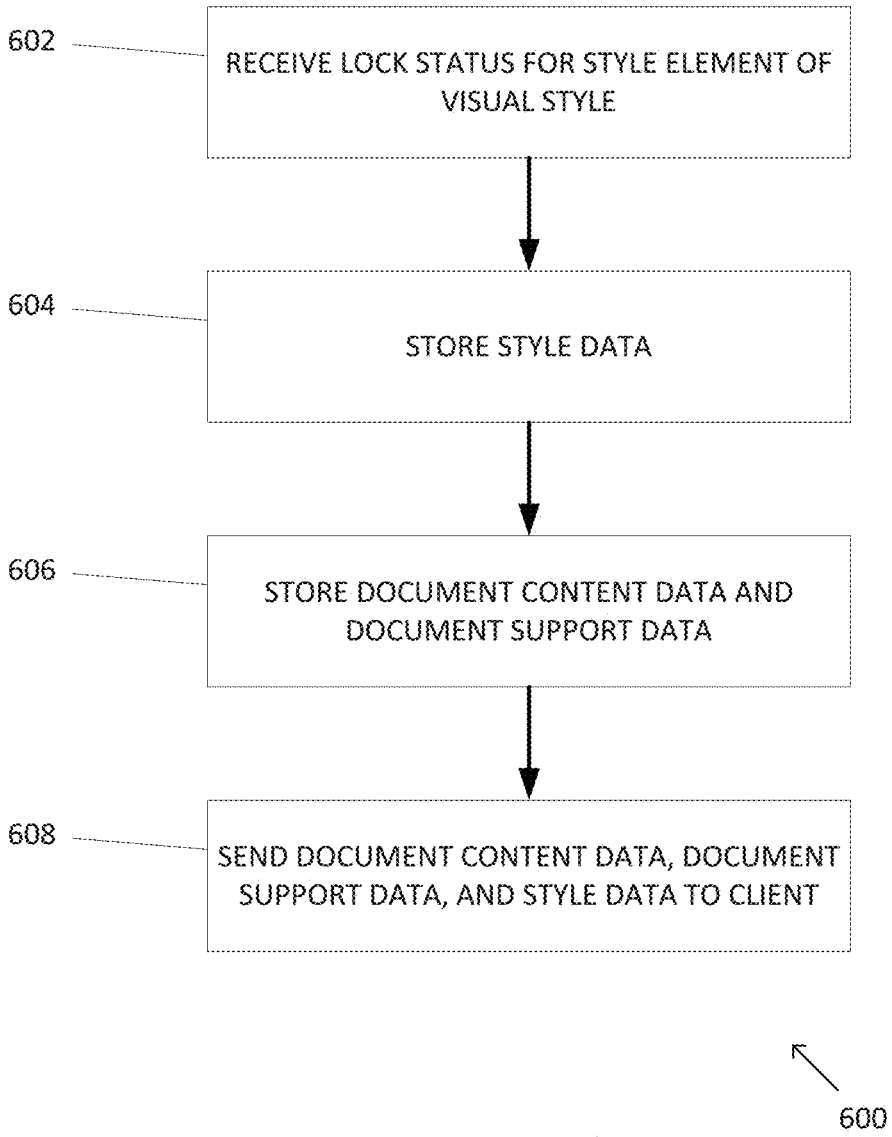

602
RECEIVE LOCK STATUS FOR STYLE ELEMENT OF VISUAL STYLE
604
STORE STYLE DATA
606
STORE DOCUMENT CONTENT DATA AND DOCUMENT SUPPORT DATA
608
SEND DOCUMENT CONTENT DATA, DOCUMENT SUPPORT DATA, AND STYLE DATA TO CLIENT
600

FIG. 6

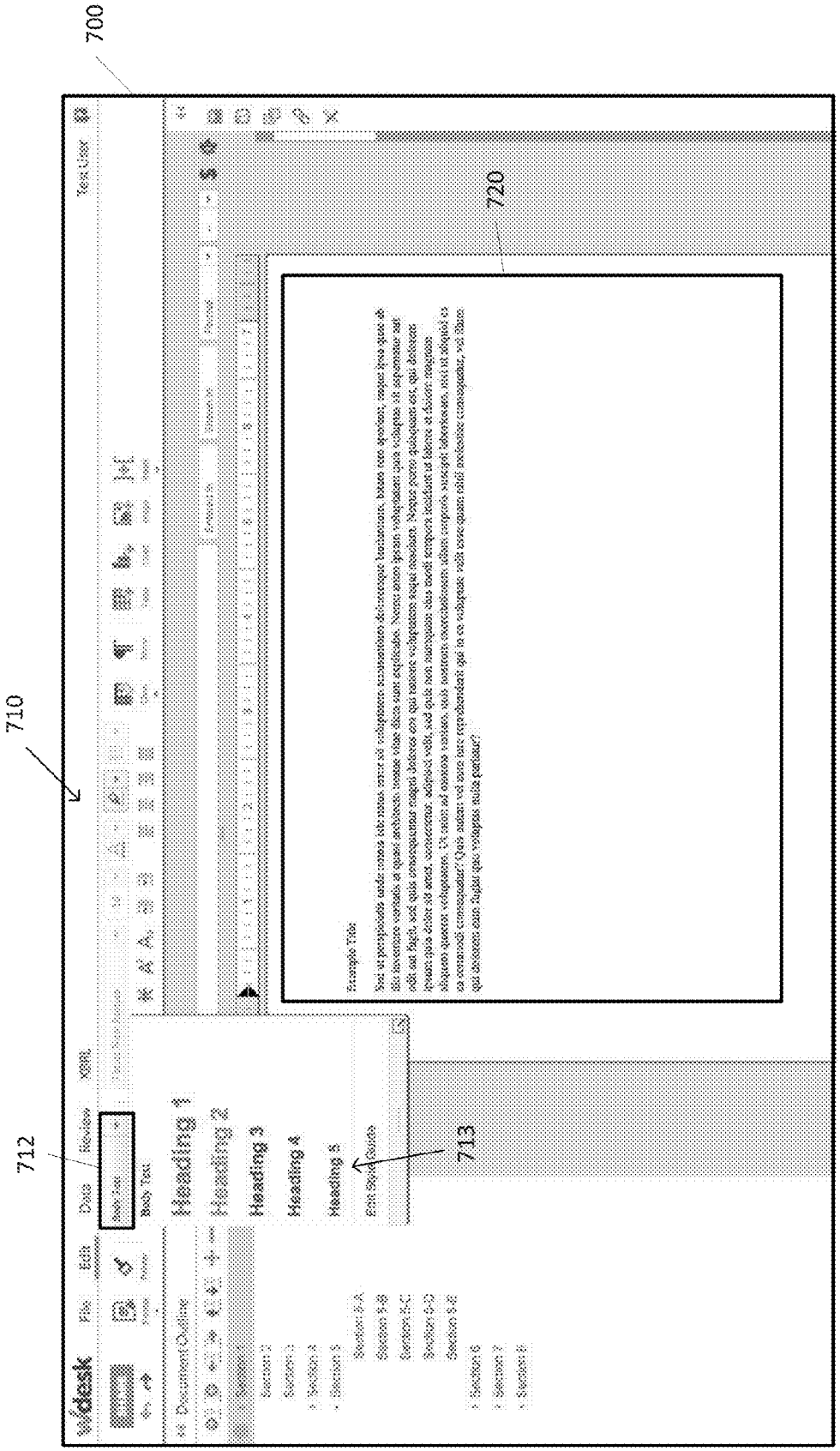

700
710
712
713
720
Heading 1
Heading 2
Heading 3
Heading 4
Heading 5

FIG. 7

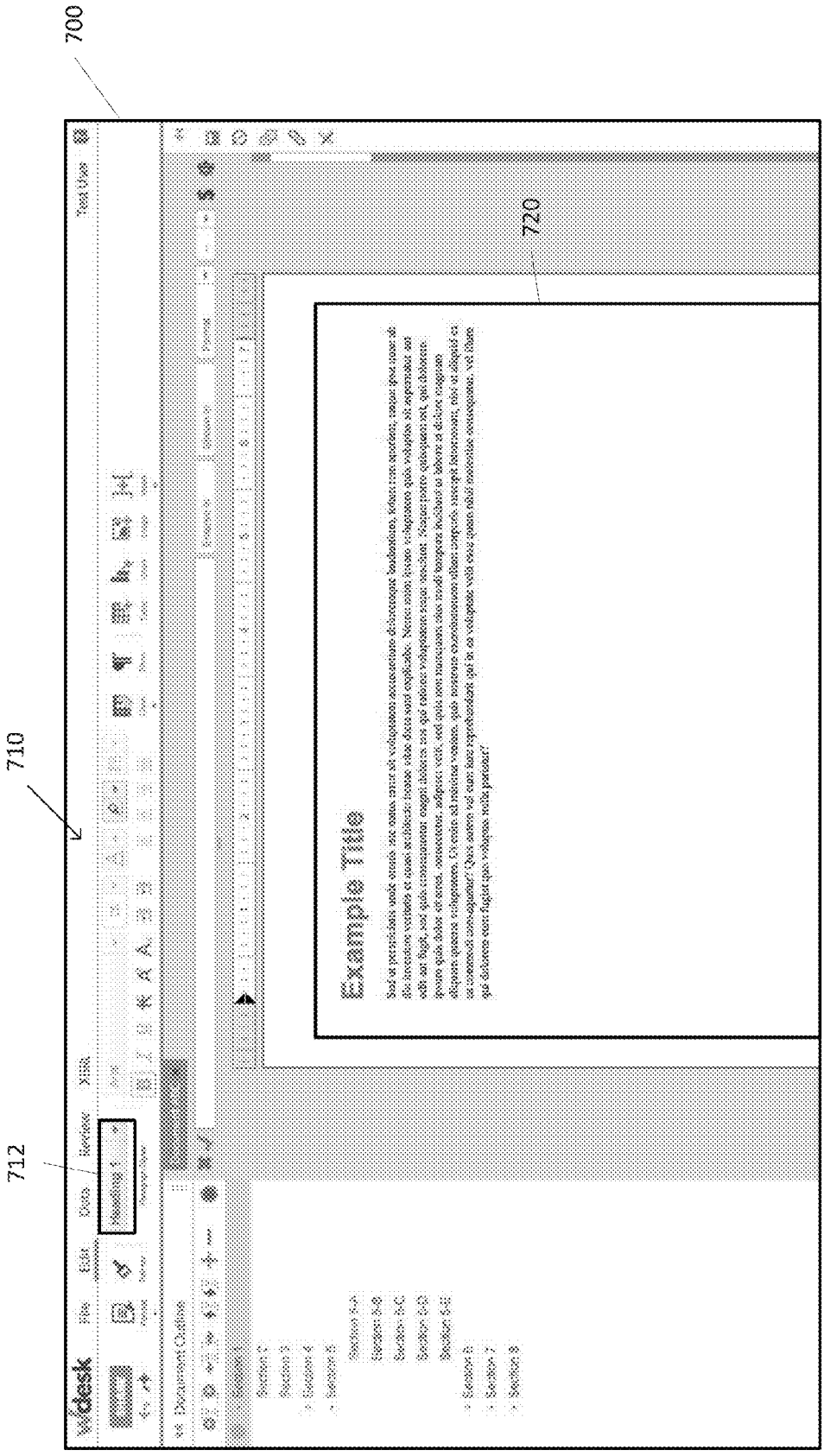


FIG. 8

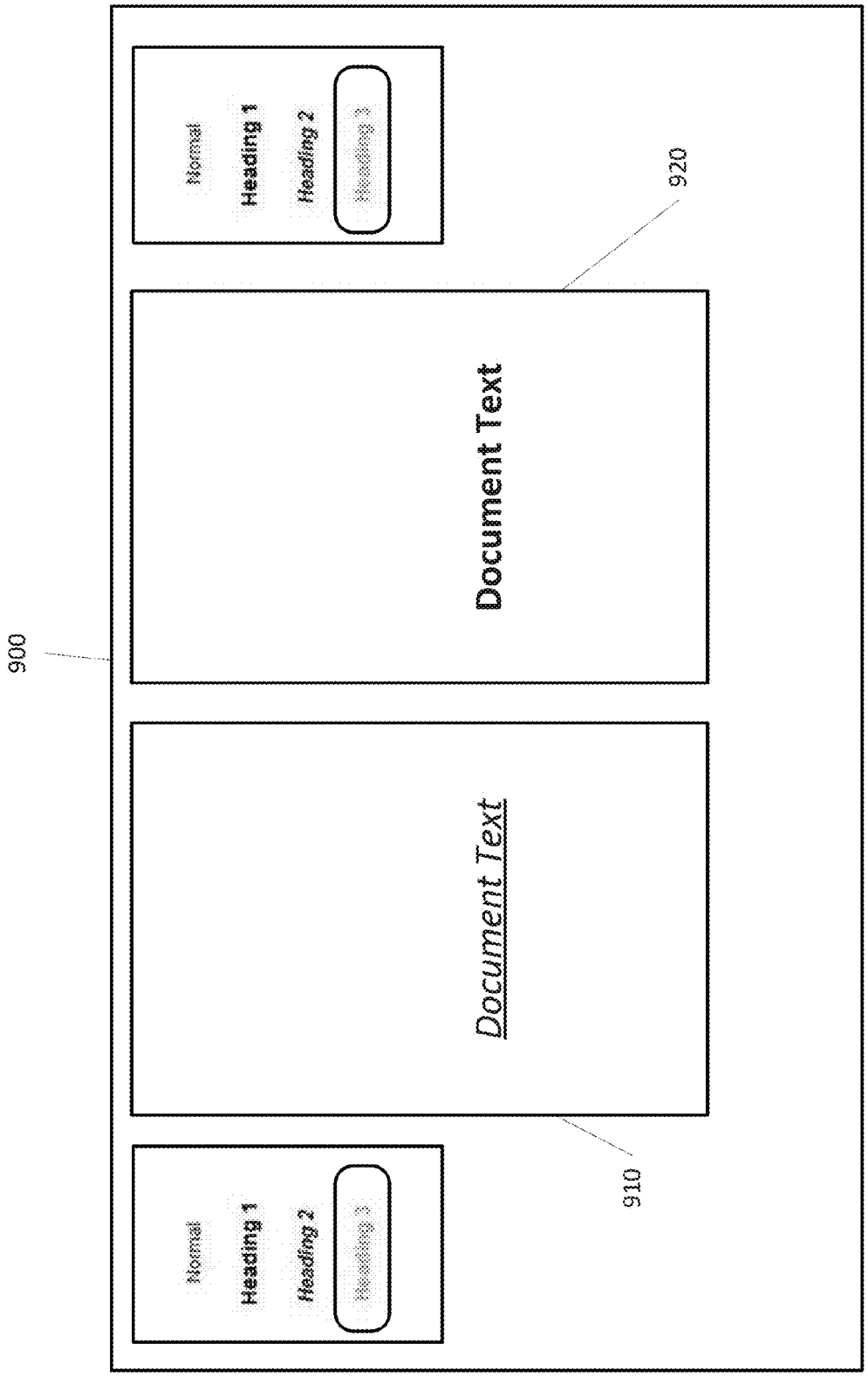

900
Normal
Heading 1
Heading 2
Heading 3
Document Text
920
Document Text
910
Normal
Heading 1
Heading 2
Heading 3

FIG. 9

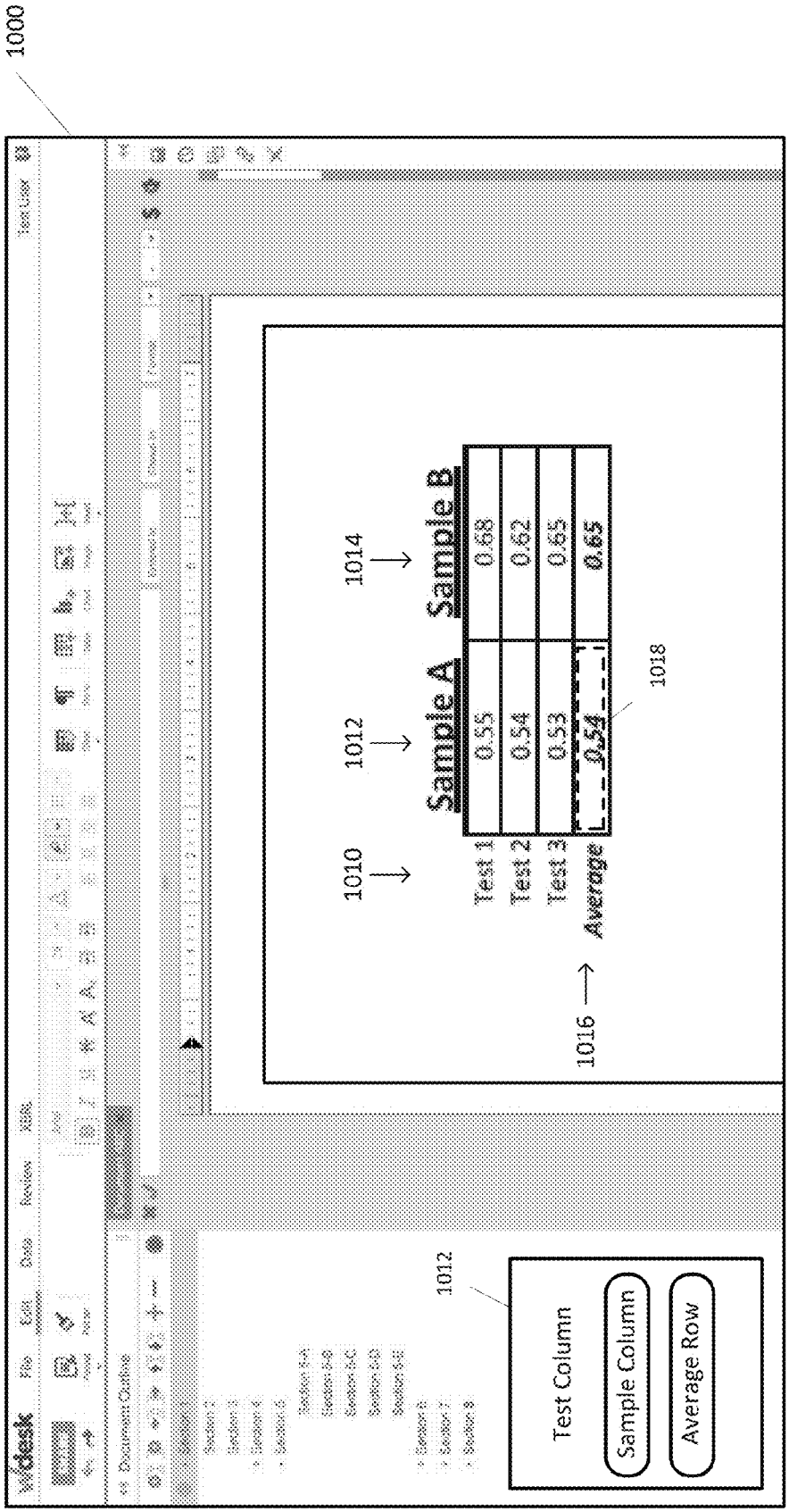

1000
1010
1012
1014
1016
1018
Sample A
Sample B
Test 1
Test 2
Test 3
Average
0.55
0.54
0.53
0.54
0.68
0.62
0.65
0.65
Test Column
Sample Column
Average Row

FIG. 10

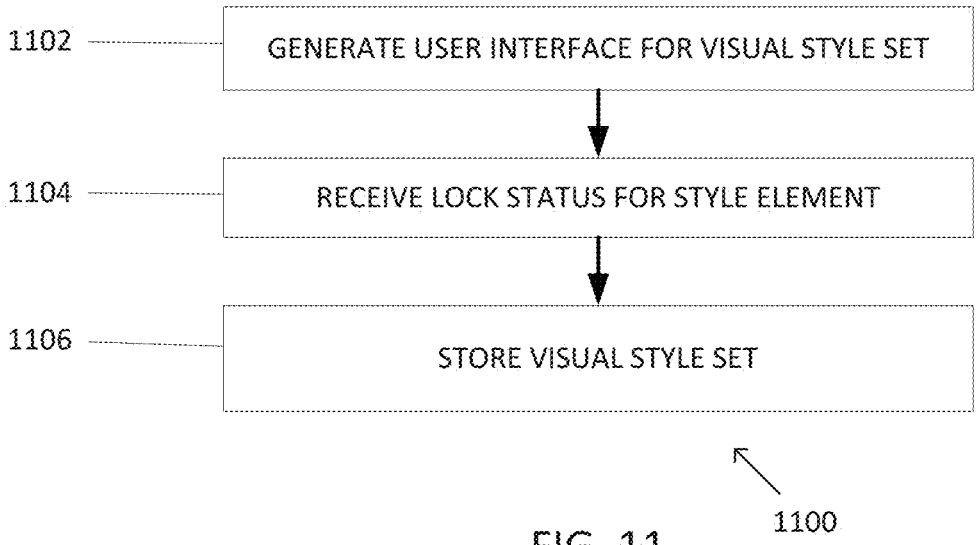

1102
GENERATE USER INTERFACE FOR VISUAL STYLE SET
1104
RECEIVE LOCK STATUS FOR STYLE ELEMENT
1106
STORE VISUAL STYLE SET
1100

FIG. 11

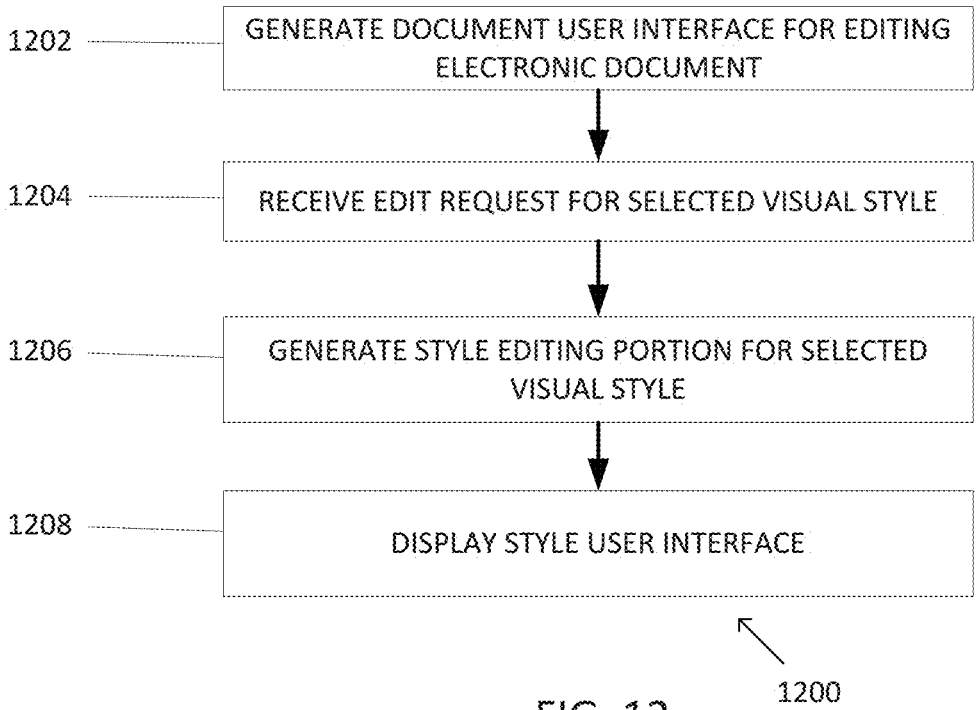

1202
GENERATE DOCUMENT USER INTERFACE FOR EDITING ELECTRONIC DOCUMENT
1204
RECEIVE EDIT REQUEST FOR SELECTED VISUAL STYLE
1206
GENERATE STYLE EDITING PORTION FOR SELECTED VISUAL STYLE
1208
DISPLAY STYLE USER INTERFACE
1200

FIG. 12

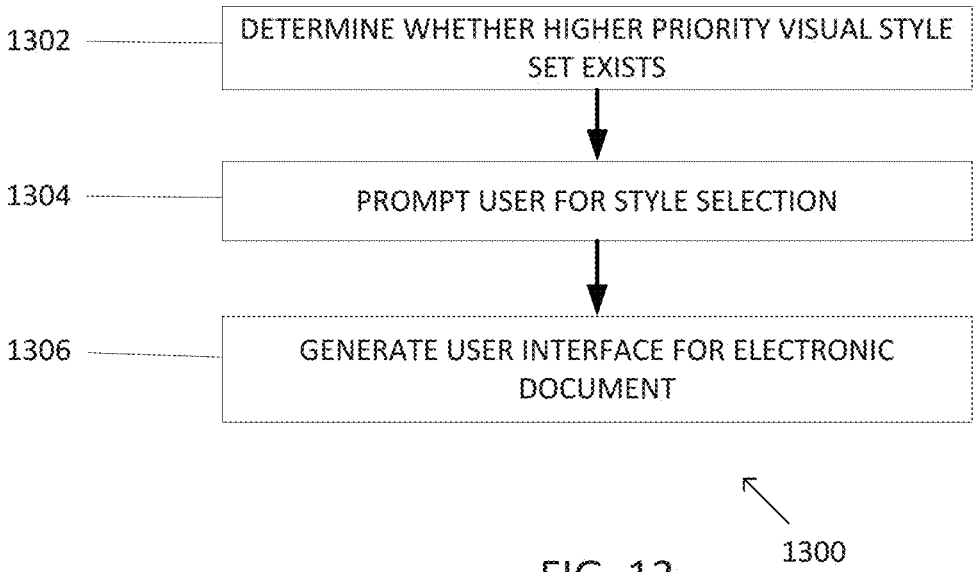
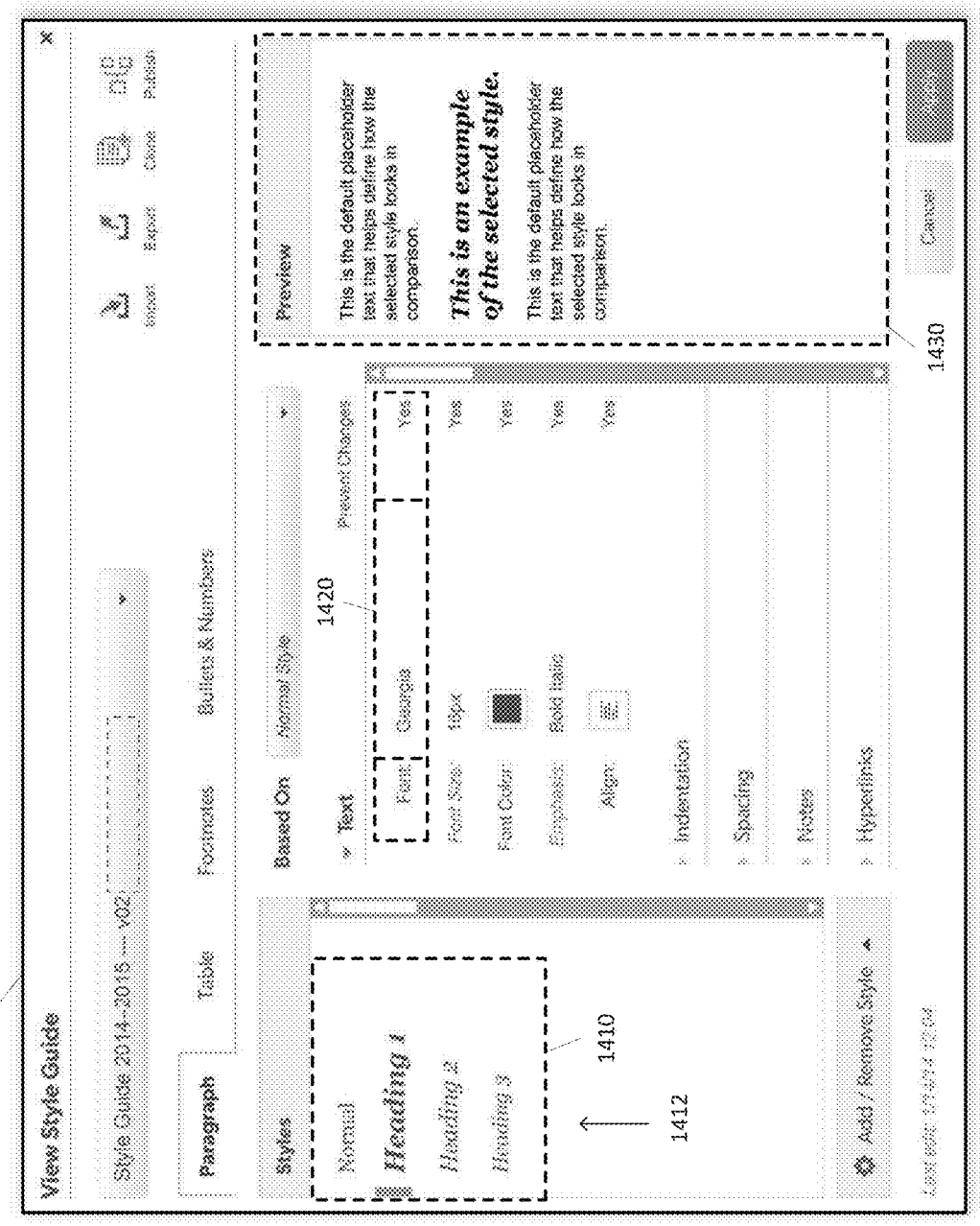

1302
DETERMINE WHETHER HIGHER PRIORITY VISUAL STYLE SET EXISTS
1304
PROMPT USER FOR STYLE SELECTION
1306
GENERATE USER INTERFACE FOR ELECTRONIC DOCUMENT
1300

FIG. 13


1400
View Style Guide
Style Guide 2014-2015 — v02
Import
Export
Close
Paragraph
Table
Footnotes
Bullets & Numbers
Styles
Based On
Normal Style
Preview
Normal
Heading 1
Heading 2
Heading 3
1410
1412
1420
Text
Present Changes
Font
Georgia
Yes
Font Size
18pt
Font Color
Emphasis
Bold Italic
Align
Indentation
Spacing
Notes
Hyperlinks
Add / Remove Style
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This is an example of the selected style.
1430
Cancel

FIG. 14

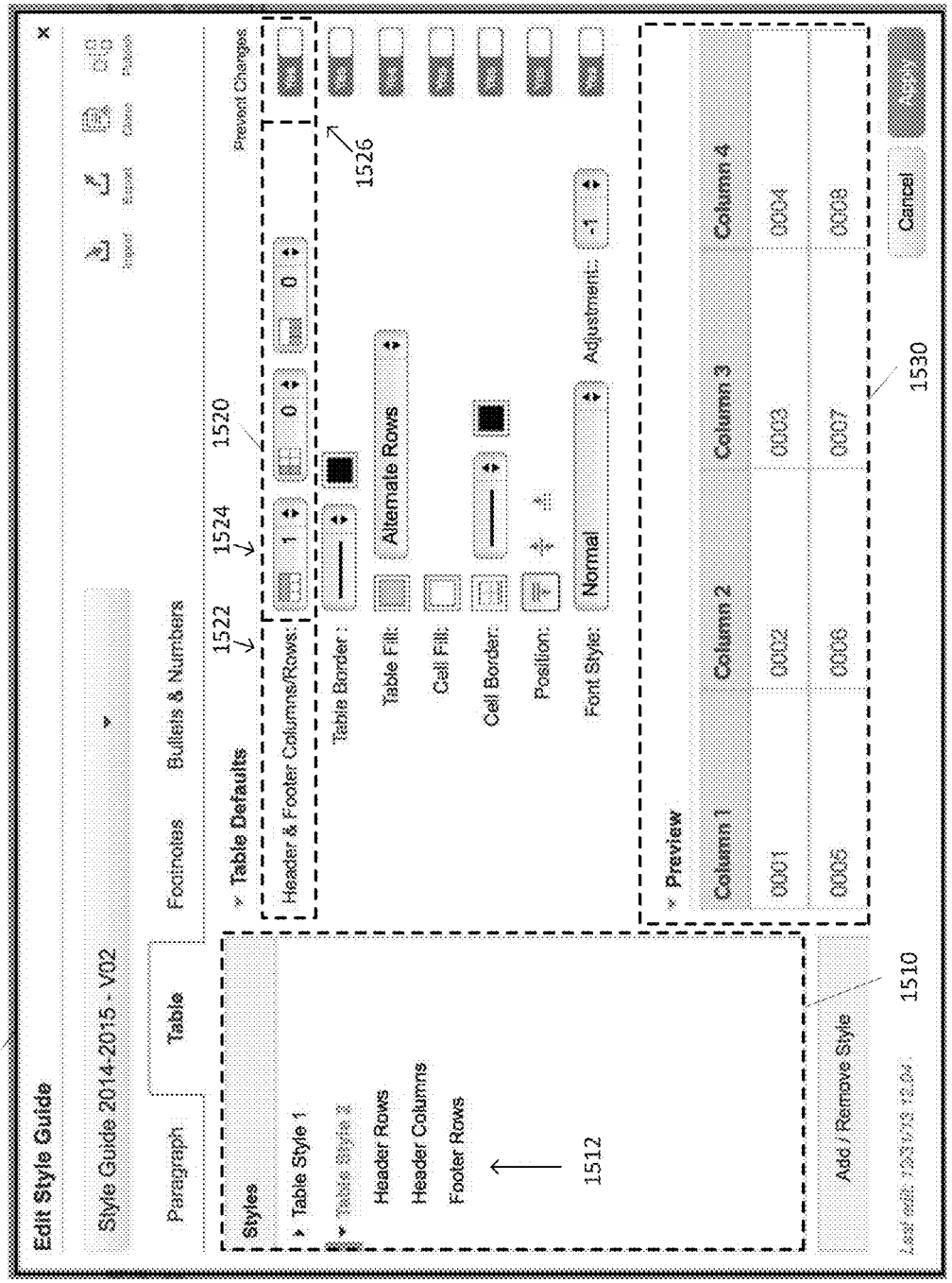
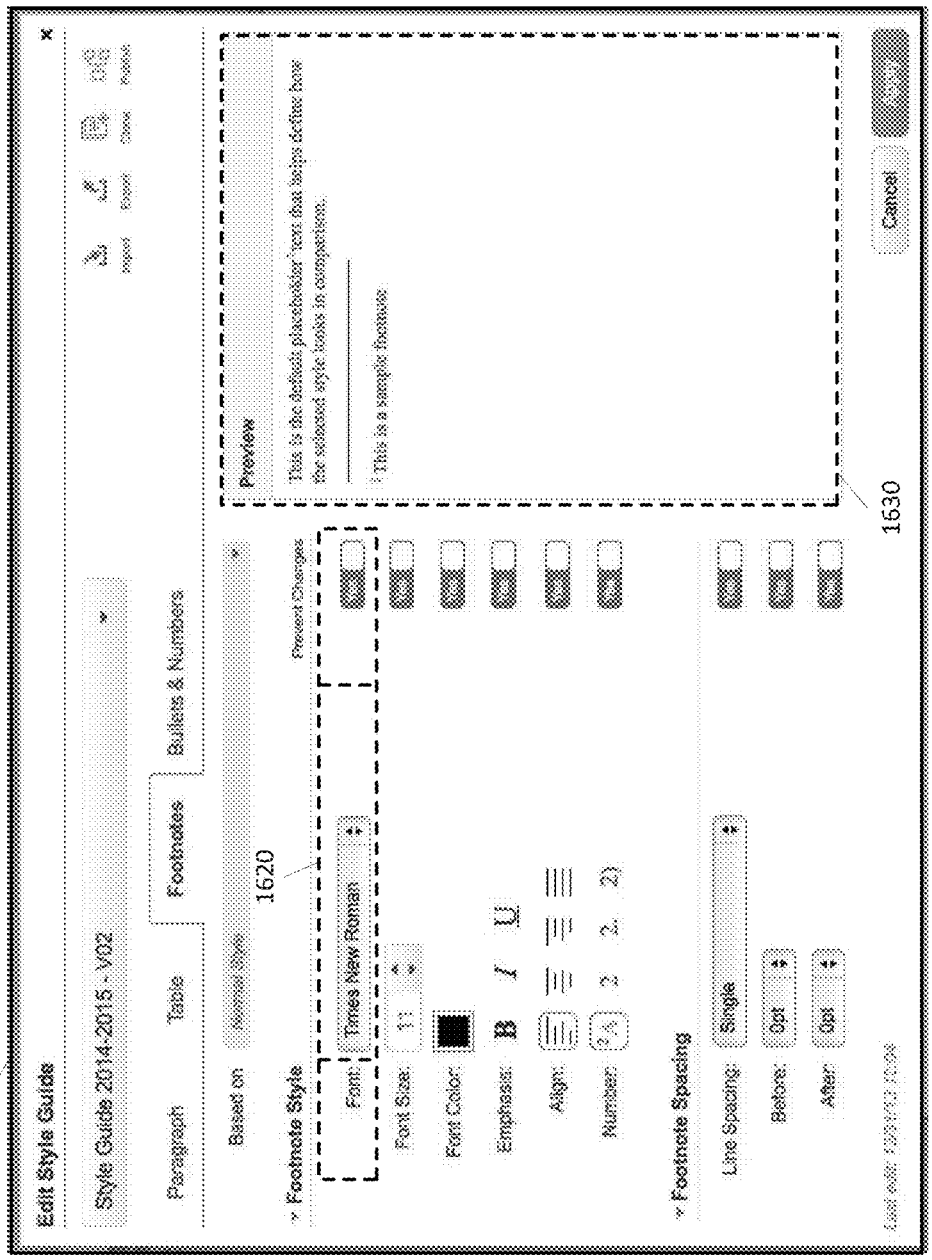

1500
Edit Style Guide
Style Guide 2014-2015 - V02
Paragraph
Table
Footnotes
Bullets & Numbers
Styles
Table Style 1
Header Rows
Header Columns
Footer Rows
1512
Add / Remove Style
1510
Table Defaults
1522
1524
1520
Prevent Changes
Header & Footer Columns/Rows:
Table Border:
Table Fill:
Alternate Rows
Cell Fill:
Cell Border:
Position:
Font Style:
Normal
Adjustment:
1526
Preview
Column 1
Column 2
Column 3
Column 4
0001
0002
0003
0004
0005
0006
0007
0008
1530
Cancel

FIG. 15


1600
Edit Style Guide
Style Guide 2014-2015 - V02
Paragraph
Table
Footnotes
Bullets & Numbers
Based on
Normal Char
Present Changes
Footnote Style
Font:
Times New Roman
Font Size:
11
Font Color:
Emphasis:
B
I
U
Align:
Number:
1.
2.
3)
Footnote Spacing
Line Spacing:
Single
Before:
0pt
After:
0pt
Preview
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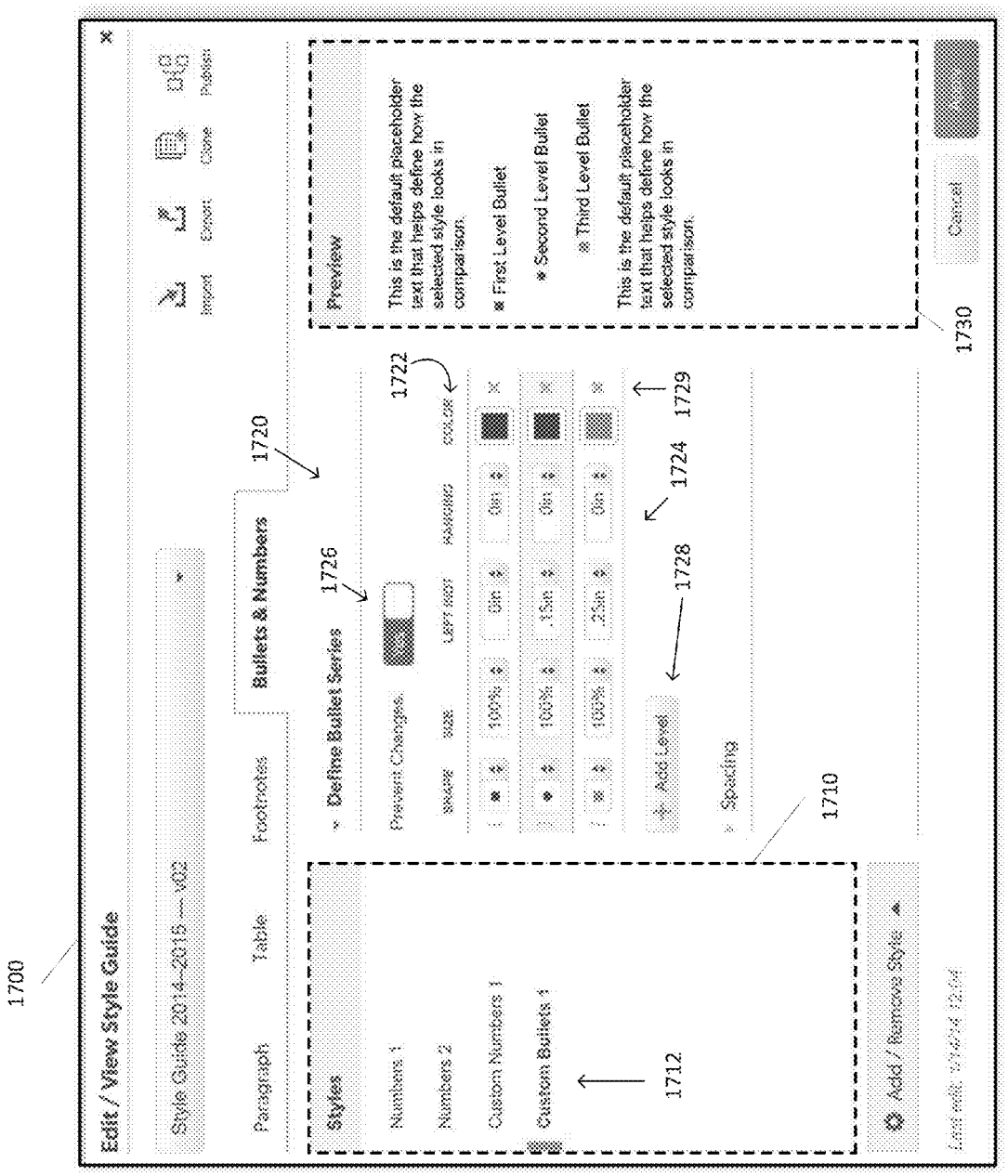
This is a sample footnote
Cancel
1620
1630

FIG. 16


1700
Edit / View Style Guide
Style Guide 2014–2015 — V02
Import
Export
Clone
Publish
Paragraph
Table
Footnotes
Bullets & Numbers
1720
Styles
Numbers 1
Numbers 2
Custom Numbers 1
Custom Bullets 1
1712
Add / Remove Style
1710
Define Bullet Series
1726
Present Changes
1722
Add Level
1728
1724
1729
Spacing
Preview
This is the default placeholder text that helps define how the selected style looks in comparison.
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Second Level Bullet
Third Level Bullet
This is the default placeholder text that helps define how the selected style looks in comparison.
1730
Cancel

FIG. 17

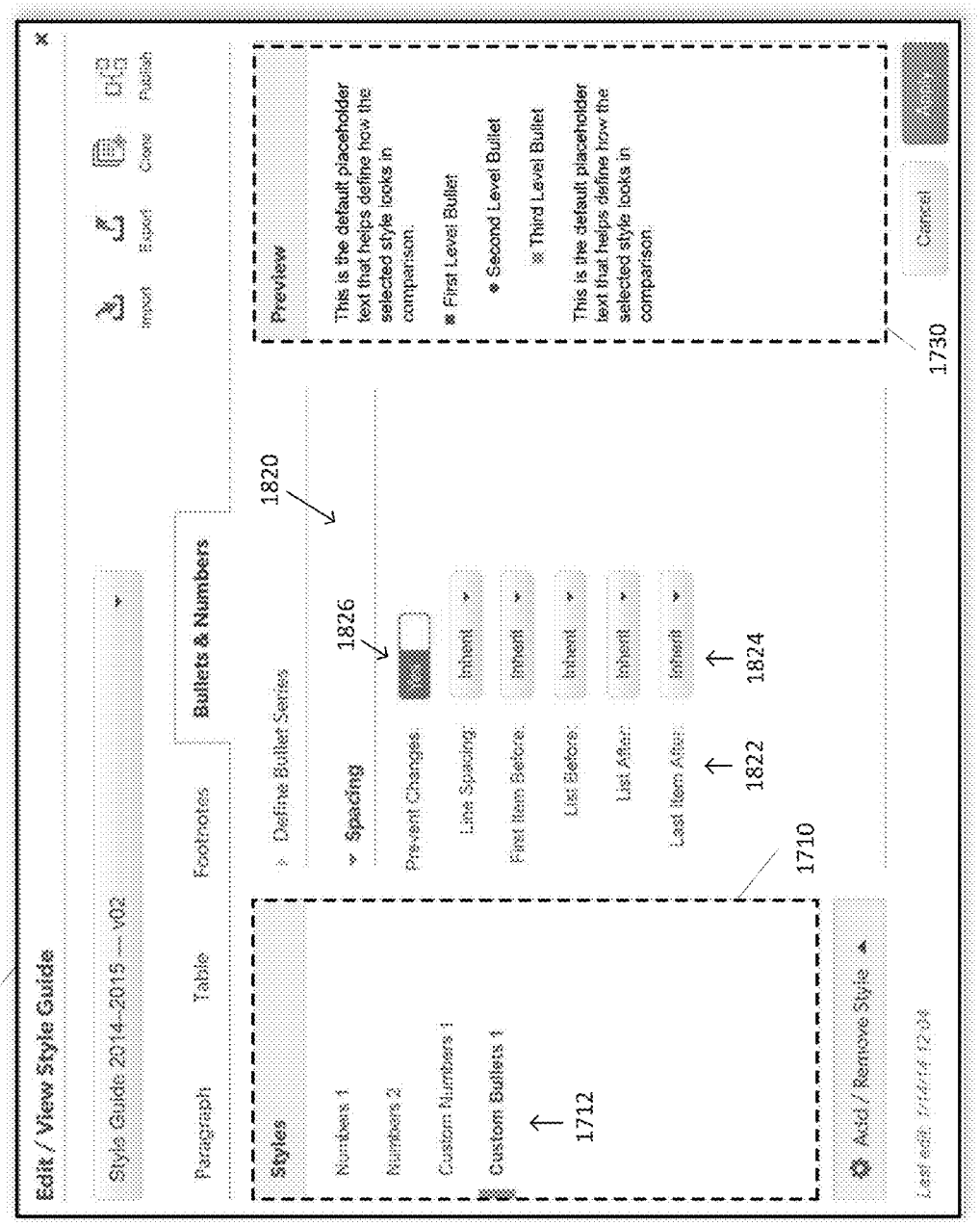
1800
Edit / View Style Guide
Style Guide 2014-2015 — v02
Import
Export
Close
Publish
Paragraph
Table
Footnotes
Bullets & Numbers
Styles
Numbers 1
Numbers 2
Custom Numbers 1
Custom Bullets 1
1712
Define Bullet Series
1820
Spacing
1826
Prevent Changes
Line Spacing:
First Item Before:
List Before:
List After:
Last Item After:
Inherit
1822
1824
1710
Preview
This is the default placeholder text that helps define how the selected style looks in comparison.
First Level Bullet
Second Level Bullet
Third Level Bullet
This is the default placeholder text that helps define how the selected style looks in comparison.
1730
Add / Remove Style
Cancel

FIG. 18

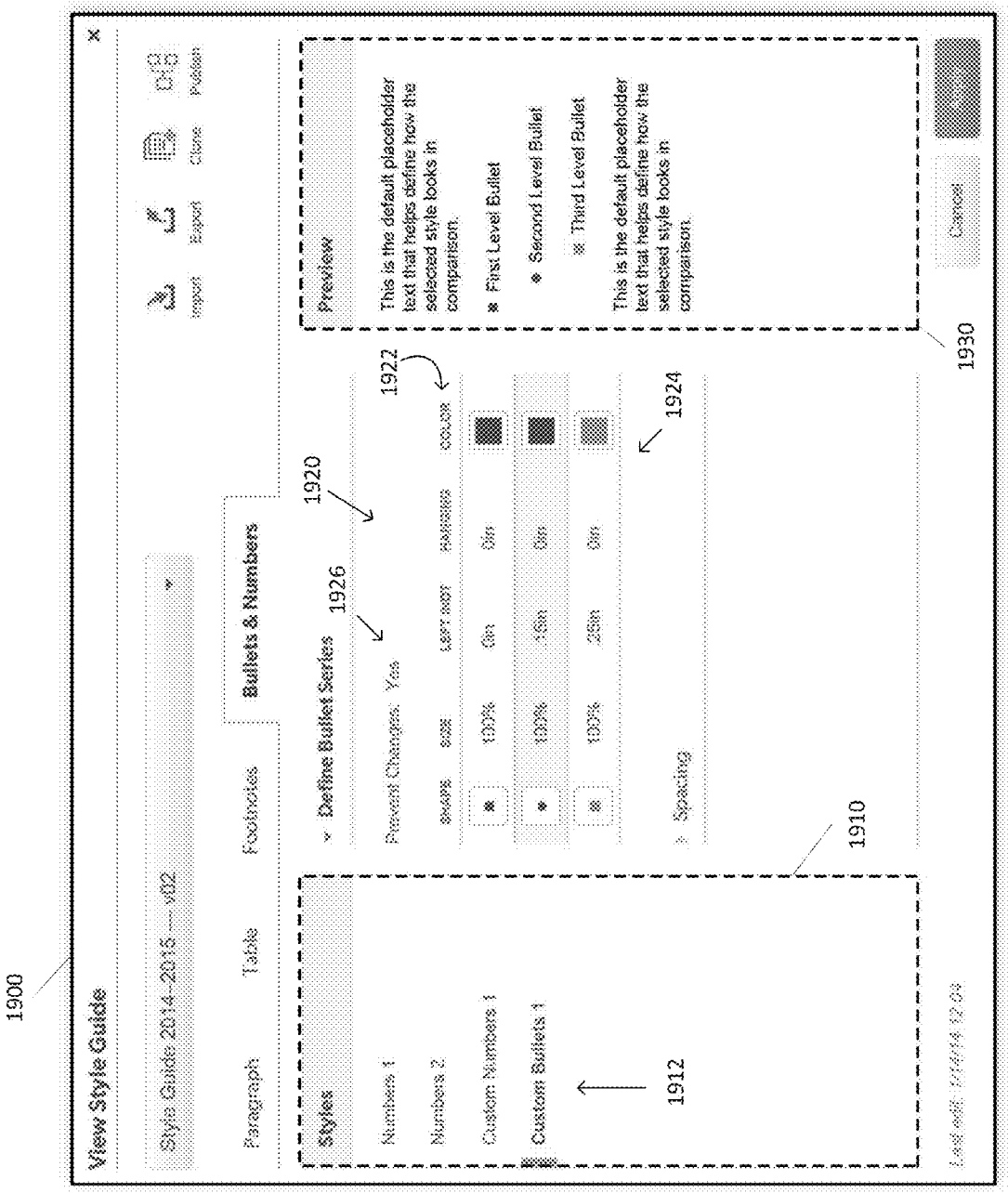
1900
View Style Guide
Style Guide 2014–2015 — v02
Import
Export
Close
Paragraph
Table
Footnotes
Bullets & Numbers
Styles
Numbers 1
Numbers 2
Custom Numbers 1
Custom Bullets 1
1912
1910
Define Bullet Series
1920
1926
Prevent Changes: Yes
1922
Spacing
1924
Preview
This is the default placeholder text that helps define how the selected style looks in comparison.
First Level Bullet
Second Level Bullet
Third Level Bullet
This is the default placeholder text that helps define how the selected style looks in comparison.
1930
Cancel

FIG. 19

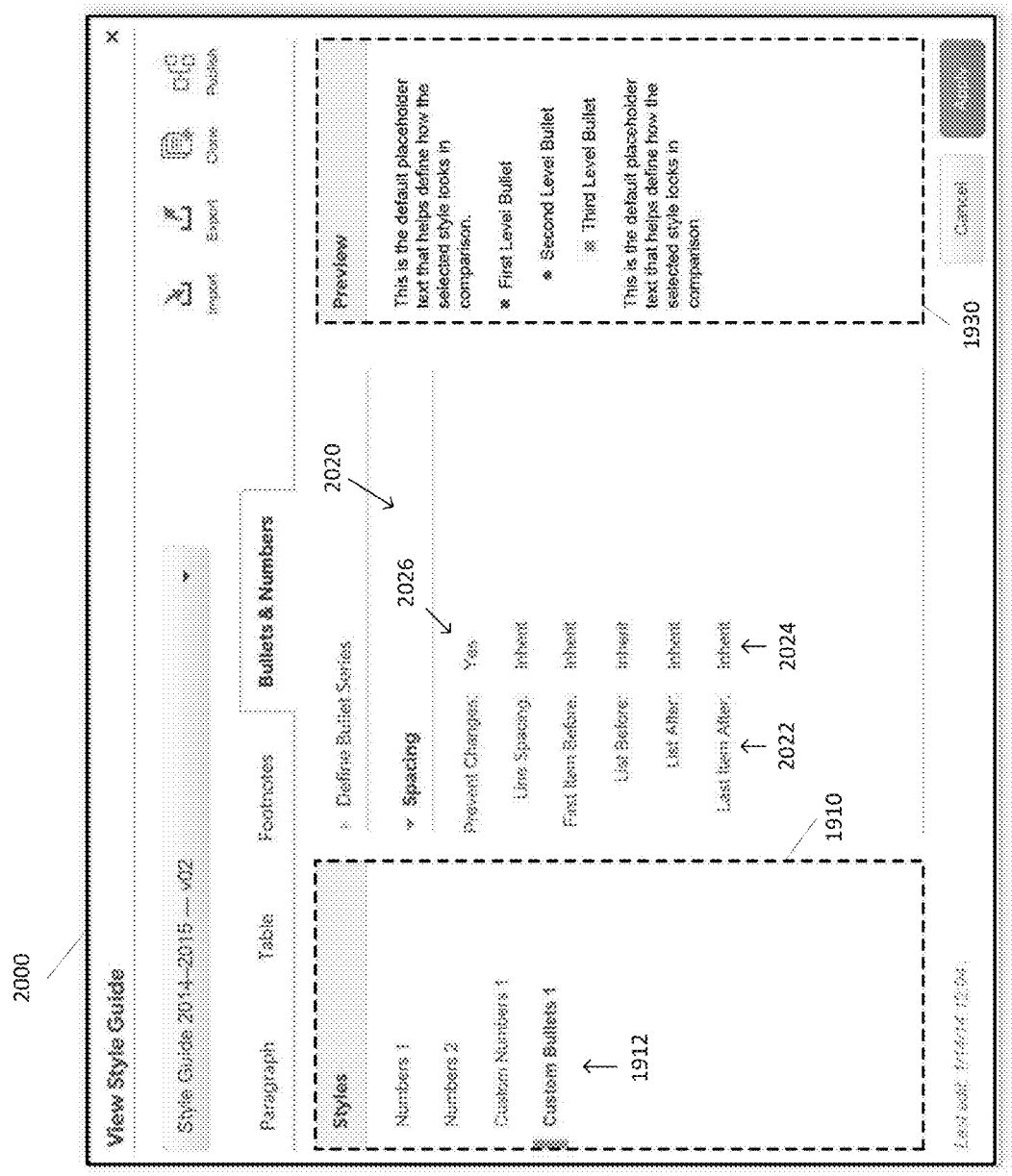
2000
View Style Guide
Style Guide 2014–2015 — V2
Import
Export
Close
Publish
Paragraph
Table
Footnotes
Bullets & Numbers
Styles
Numbers 1
Numbers 2
Custom Numbers 1
Custom Bullets 1
1912
Define Bullet Series
2020
Spacing
2026
Prevent Changes: Yes
Line Spacing: Inherit
First Item Before: Inherit
List Before: Inherit
List After: Inherit
Last Item After: Inherit
2022
2024
1910
Preview
This is the default placeholder text that helps define how the selected style looks in comparison.
First Level Bullet
Second Level Bullet
Third Level Bullet
This is the default placeholder text that helps define how the selected style looks in comparison.
1930
Cancel

FIG. 20

METHOD AND APPARATUS FOR SELECTIVE VISUAL FORMATTING OF AN ELECTRONIC DOCUMENT USING A STYLE ELEMENT LOCK STATUS

CROSS-REFERENCE TO RELATED APPLICATION

This disclosure claims the priority benefit of U.S. Provisional Patent Application No. 61/924,948, entitled "Method and Apparatus for Selective Visual Formatting of an Electronic Document" and filed on Jan. 8, 2014, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND

1. Field

Various embodiments disclosed herein relate to a method and apparatus for controlling visual formatting of an electronic document.

2. Related Art

An electronic document typically includes document content data and document support data. Document support data may include visual style data in the form of metadata for controlling visual formatting of the electronic document. Visual style data is information that determines how the document content looks or appears when displayed on a screen or printed on paper. For example, visual style data may include information regarding whether text content is in bold, italicized, or underlined, its spacing with respect to other document content, or other visual formatting characteristics.

Conventional systems for storing, viewing, and editing a document in a client-server architecture typically include a server and a thin client device. The server stores the document as a document file in a database and provides processing power on behalf of the thin client device. The document file includes document content data and document support data which is stored together so that the server can properly render the document for viewing or editing on the thin client device.

When organizations or users have multiple electronic documents, they may desire consistent visual formatting or style across the documents. An organization may use a style document with information regarding the desired visual formatting, such as descriptions or examples of visual styles. Where each document has its own document support data, a user must compare each document individually against the style guide to obtain the desired visual formatting. Alternatively, the organization may use a system that stores document content data separately from document support data. While this approach allows for centralized control over the visual styles, some documents may use many different visual styles to accommodate slight differences in visual formatting. For example, four separate visual styles may differ only in whether bold and italics formatting are enabled or disabled (i.e., styles with bold and italics disabled, bold only enabled, italics only enabled, both bold and italics enabled). With additional differences in visual formatting, the number of styles required to cover each variation may be confusing to the user.

SUMMARY

According to an embodiment, a method of managing display of electronic documents includes: generating a user interface for a visual style set of visual styles that affect display of electronic document content, where a visual style of the visual style set includes a style element set of style elements; receiving, via the user interface, a lock status for a style element of the style element set, where the lock status indicates whether the style element is editable or non-editable by a user of an electronic document associated with the visual style set; and storing the visual style set with the lock status for the style element.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

While the appended claims set forth the features of the present techniques with particularity, these techniques, together with their objects and advantages, may be best understood from the following detailed description taken in conjunction with the accompanying drawings of which:

FIG. **1** is a block diagram illustrating a system for controlling visual formatting of an electronic document, according to an embodiment;

FIG. **2** is a block diagram illustrating a server and a client of the system of FIG. **1**, according to an embodiment;

FIG. **3** is a block diagram illustrating components of a server processor of the server of FIG. **2**, according to an embodiment;

FIG. **4** is a diagram illustrating a user interface, provided by the system of FIG. **1**, for editing a visual style set of visual styles that affect display of electronic document content, according to an embodiment;

FIG. **5** is a diagram illustrating another user interface, provided by the system of FIG. **1**, for editing the visual style set of FIG. **4**, according to an embodiment;

FIG. **6** is a flowchart illustrating a method for managing display of electronic documents that may be performed by the system of FIG. **1**, according to an embodiment;

FIG. **7** is a diagram illustrating a user interface, provided by the system of FIG. **1**, for using a visual style set for an electronic document, according to an embodiment;

FIG. **8** is another diagram illustrating the user interface of FIG. **7**, according to an embodiment;

FIG. **9** is a diagram illustrating a user interface, provided by the system of FIG. **1**, for comparing first and second visual style sets, according to an embodiment;

FIG. **10** is another diagram illustrating the user interface of FIG. **7**, according to an embodiment;

FIG. **11** is a flowchart illustrating a method for managing display of electronic documents that may be performed by the system of FIG. **1**, according to an embodiment;

FIG. **12** is a flowchart illustrating a method for managing display of electronic documents in a client-server architecture that may be performed by the system of FIG. **1**, according to an embodiment;

FIG. **13** is a flowchart illustrating another method for managing display of electronic documents in a client-server architecture that may be performed by the system of FIG. **1**, according to an embodiment;

FIG. **14** is a diagram illustrating a style user interface, provided by the system of FIG. **1**, for viewing a visual style set of visual styles that affect display of electronic document content, according to an embodiment;

FIG. **15** is a diagram illustrating a style user interface, provided by the system of FIG. **1**, for editing or viewing a visual style set, including table styles, that affects display of electronic document content, according to an embodiment;

FIG. **16** is a diagram illustrating a style user interface, provided by the system of FIG. **1**, for editing or viewing a visual style set, including a footnote style, that affects display of electronic document content, according to an embodiment;

FIG. **17** and FIG. **18** are diagrams illustrating style user interfaces, provided by the system of FIG. **1**, for editing or viewing a visual style set, including bulleted list styles and numbered list styles, that affects display of electronic document content, according to an embodiment;

FIG. **19** and FIG. **20** are diagrams illustrating style user interfaces, provided by the system of FIG. **1**, for viewing a visual style set of visual styles, including bulleted list styles and numbered list styles, that affects display of electronic document content, according to an embodiment.

DETAILED DESCRIPTION

As described herein, various embodiments of a method and apparatus for controlling visual formatting of an electronic document include a server and a client device. A method for managing display of electronic documents includes generating a user interface for a visual style set of visual styles that affect display of electronic document content. A visual style of the visual style set includes a style element set of style elements. A lock status for a style element of the style element set is received via the user interface. The lock status indicates whether the style element is editable or non-editable by a user of an electronic document associated with the visual style set. The visual style set is stored with the lock status for the style element.

With centralized control over visual styles, many visual styles may be needed to allow a user to select a visual style with only a slight difference in visual formatting. Instead of providing multiple visual styles to accommodate the differences, a single visual style that a user may selectively modify is provided. For example, a user interface may be provided to a user that allows selection of a visual style and selective modification of a bold formatting feature, italics formatting feature, or other style elements. Accordingly, a visual style may be "locked down" while still allowing some flexibility to the user.

The style elements for a visual style may be modified and selectively locked by a user (e.g., a style guide manager). For example, the style guide manager may set the font face and emphasis formatting of a "Heading 1" style to "Arial" and "bold," respectively. The manager may then lock one or more of the style elements to prevent their modification by other users (e.g., style guide users). After making changes to a style guide, the manager may publish the style guide, enabling its use by the style guide users. The style guide user may view and modify the unlocked style elements. The style guide user may view but not modify the locked style elements. The locked style elements may be "grayed out" or displayed with a lock indication (such as a padlock icon).

In more detail, FIG. **1** is a block diagram illustrating a system **10** for controlling visual formatting of an electronic document, according to an embodiment. The system **10** includes a server **100** and a client device **200**. In other embodiments, the system **10** may include one or more additional instances **201** of the client device **200**. The server **100** may include a database **110**, a memory **115**, and a server processor **150**. The database **110** stores document files (e.g., document content data and document support data), visual style sets (e.g., style data), or other files. The document content data may include text, tables, images, or other content. The document support data includes a reference or link to a visual style set (or "style guide") for display of the document content data. Although FIG. **1** shows that the server **100** includes one processor, in other embodiments, the server **100** may include any number of processors.

The client device **200** is connected to the server **100** via a communication link **140**. The communication links **140** may include, for example, Wi-Fi, 3G networks, 4G networks, or other telecommunication networks known in the art. At least one application **210** is provided by the server **100** via the client device **200**. The server **100** in one example provides the application **210** to the client device **200**, for example, during an installation, initialization, registration, or syncing procedure. Alternatively, the application **210** may be installed by a user. The client device **200** may include a tablet PC, a mobile phone, a smart phone, a laptop, a computer terminal, and any other client devices known in the art. In the following, a single reference character may be used to represent multiple elements. For example, a "client device **200**" may be referenced, but this could possibly include the client device **200** and one or more of the additional instances **201** of the client device **200**.

FIG. **2** is a block diagram illustrating the server **100** and the client device **200** of FIG. **1**. The server **100** includes the document database **110**, the memory **115**, and the server processor **150**. The server processor **150** performs a visual style set maintenance process **120** and a document maintenance process **130**. The client device **200** is connected to the server **100** via the communication link **140**. The client device **200** may include a display **202**, an input unit **204**, a memory **206**, and a client processor **208**. The display **202** may be, for example, a liquid crystal display (LCD), a LED-LCD, or other displays known in the art. The input unit **204** may be, for instance, a touch screen, a stylus, a keypad, a keyboard, or other input devices known in the art.

The application **210** allows a user to create, view, or modify visual style sets, as described herein. The application **210** also allows a user to access, download, view, or edit various electronic documents stored in the document database **110** of the server **100** based on one or more of the visual style sets. The application **210** may also include a user authentication feature, where the user is required to enter a username and password, or other credentials, before the user is permitted to access electronic documents or visual style sets stored on the server **100**.

The application **210** may be executed by the server processor **150** or the client processor **208**, or both (e.g., as two instances of the application **210** or separate server and client applications). In one example, the server processor **150** executes the application **210** and provides a user interface as an output to the client device **200** via the communication link **140**. In another example, the server **100** provides data and document content to the client device **200** which allows the client device **200** to execute the application **210**. In this case, the data may include one or more of a user interface generation process or one or more visual style sets. "Generating the user interface" may refer to generating an image or display of a user interface or generating data that may be interpreted or executed by the client device **200** for display of the user interface to the user of the client device **200**.

FIG. **3** is a block diagram illustrating components of a server processor **150**, according to an embodiment. The server processor **150** may include one or more of a style user interface generator **152**, a document user interface generator **154**, or a comparison user interface generator **156**. The style user interface generator **152** performs all or a portion of the visual style set maintenance process **120**. The document user interface generator **154** and comparison user interface generator **156** perform all or a portion of the document maintenance process **130**. The style user interface generator **152**, the document user interface generator **154**, and the comparison user interface generator **156** may cooperate with the applica-

tion **210** to provide user interfaces **400** (FIG. **4**), **500**, (FIG. **5**), **700** (FIG. **7**), or **900** (FIG. **9**). Each component illustrated in FIG. **3** may be implemented by any number of hardware and/or software components configured to perform the specified functions. Although the components are illustrated as a part of the server processor **150** in the present embodiment, the components may be separate and independent from the server processor **150** in other embodiments.

FIG. **4** is a diagram illustrating a style user interface **400**, provided by the system **10** (e.g., via the application **210**) for viewing or editing a visual style set of visual styles (e.g., a "style guide") that affect display of electronic document content, according to an embodiment. As illustrated in FIG. **4**, a visual style is a paragraph style that includes one or more style elements for visual formatting of document content to which the visual style is applied. Example style elements include font face, font size, font color, emphasis formatting (e.g., bold, italics, underline, strikethrough), alignment (e.g., left-aligned, centered, right-aligned, justified, superscript, subscript), spacing (e.g., paragraph indentation, tab stops, paragraph spacing, line spacing, character spacing), borders, background colors, hyperlink characteristics, or other visual characteristics. While paragraph styles are shown as a style type in FIG. **4**, other style types may also be used, such as table styles, image styles, legend styles, header styles, graph styles, chart styles, or others as will be apparent to those skilled in the art. For example, a table style may include row heights, column widths, fonts, borders, background colors, fill patterns, text alignment, header rows or columns, footer rows or columns, or other style elements. In another example, an image style may include transparency, color model, compression type, image size, scaling, or other style elements. In yet another example, list styles (e.g., bulleted list styles or numbered list styles) may include style elements that affect number formatting, selection of glyph or icons for bullets, or other style elements. As another example, a chart style may have style elements for a legend or type of chart (e.g., a bar chart, pie chart, line chart).

Tables may also use one or more cell styles, row styles, column styles, header row styles, or header column styles, with each style having one or more style elements. While a header row style or header column style is generally selected for a first row or column of a table, these styles may also be selected for other rows or columns of a table. One or more cells of a table may correspond to multiple table styles, such as a row style and a column style. For example, a cell "B3" may correspond to a column style for a column "B" and a row style for a row "3." In this case, the row style and column style may overlap or conflict with each other.

In some embodiments, styles include a priority indicator such that where two or more styles are applied to a same document content element (e.g., the styles overlap), the style with a highest priority is used for that document content element. In another example, the style elements of the styles include respective priorities such that where two or more styles overlap, the style elements for the two or more styles with highest priorities are used. In this case, a font face style element of a column style and a font size style element of a row style may be selected and combined based on their respective priorities. In yet another example, only those style elements that are locked are combined based on their priorities. Alternative embodiments for combining styles or style elements, such as default values or default rules, will be apparent to those skilled in the art.

The style user interface **400** includes a style display portion **410** with a set of selection indicators **412** for visual styles of a visual style set. The style user interface **400** does not display document content of an electronic document. In the example shown in FIG. **4**, the visual style set includes Normal, Heading 1, Heading 2, and Heading 3 visual styles. When a visual style is selected (e.g., by clicking on the corresponding selection indicator), the application **210** displays one or more element display portions **420**. The element display portions **420** correspond to style elements of a style element set for the selected visual style. As shown in FIG. **4**, the element display portions correspond to the Normal visual style. Each displayed element display portion **420** includes one or more of a description **422** or other identifier of the style element, a selection indicator **424** for a current default value of the style element, and a lock indicator **426** for a lock status of the style element. The style element set thus corresponds to a lock status set of lock statuses. While the selection indicator **424** is shown as a drop-down box, other implementations such as toggle buttons **425** may also be used. The user may change the default value of the style element by clicking or interacting with the selection indicator **424**.

The lock status of the style element may be locked or unlocked and is user-editable via the element display portion **420**. The lock status indicates whether the style element is editable (unlocked) or non-editable (locked) by a user of an electronic document associated with the visual style set **412**. As illustrated in FIG. **4**, the lock indicator **426** includes a YES (locked) or NO (unlocked) to indicate whether changes to the style element are allowed. The user may change the lock status of the style element by clicking or interacting with the lock indicator **426**. While the lock indicator **426** as illustrated allows for only a locked or unlocked status, in other embodiments the lock status and lock indicator **426** may allow for multiple locks based on user permissions or other criteria, such as a style element priority. In this case, a separate lock status may be used for a Lead Editor, an Assistant Editor, a Drafter, or other users. Information for permissions or other criteria may be stored in the document support data for an electronic document or as style data (e.g., as separate styles for user names, groups, or other criteria).

The style user interface **400** may further include a preview display portion **430** and a description display portion **440**. The preview display portion **430** displays a document content element (such as text) based on a current value of the selection indicator **424** for each style element of the style element set of the selected visual style. Thus, the preview display portion **430** provides a sample of the selected visual style to a user so that the user may see changes in real-time without affecting actual electronic documents. The description display portion **440** displays a use description for the selected visual style. The use description is user-editable via the description display portion **440** and may be displayed to a user of an electronic document by the application **210**, for example, as a tooltip. In one example, the application **210** displays the use description upon a mouse-hover event for the corresponding selection indicator of the selection indicator set **412**.

In some embodiments, a visual style may be based on one or more other visual styles and thus inherit the style elements of a parent style. For example, a Heading 2 style may be based on a Heading 1 style. In this case, the style user interface **400** includes an inheritance indicator **450** that indicates which visual style is the parent style from which the style elements have been inherited.

FIG. **5** is a diagram illustrating another style user interface **500** provided by the system **10** for editing the visual style set of FIG. **4**, according to an embodiment. Visual styles may be added or removed from the style set. In this case, the style user interface **400** includes an "Add/Remove Style" button **460**. As shown in FIG. **5**, the application **210** displays the style user

interface **500** with a style display portion **510**. The style display portion **510** includes a selection indicator set **512** of selection indicators that correspond to a predetermined set of visual styles (Normal, Heading 1, . . . , and Footnote). The user may select one or more visual styles for a style guide from the predetermined set by clicking a corresponding checkbox. While nineteen visual styles are shown in FIG. **5**, additional or fewer visual styles may be used. In other embodiments, the style user interface **500** allows the user to create or modify visual styles with customized names and to delete visual styles from the style guide.

The application **210** may also provide an import or export feature for managing visual styles and style guides. As shown in FIG. **5**, the style user interface **500** includes import button **520** and export button **522**. When the export button **522** is selected by a user, the application **210** prompts the user to store the current style guide. The application **210** may store the style guide as style data within a file. In some embodiments, the application **210** stores or publishes the style guide in a version control system. The visual style set maintenance process **120** in one example provides the version control system. In other embodiments, the version control system is a separate application or process and may be remotely located from the server **100** and client device **200**. When the import button **520** is selected by a user, the application **210** prompts the user to select a file or version of a previously stored style guide.

As described above, the document support data for an electronic document includes a reference or link to a visual style set or style guide. If a version control system is used, the user may update the style guide over time and maintain one or more prior versions of the style guide. In this case, the reference to the style guide includes a version identifier that corresponds to a version of the style guide to be used when displaying the electronic document.

FIG. **6** is a flowchart **600** illustrating a method for managing display of electronic documents that may be performed by the system **10**, according to an embodiment. The server **100** receives (**602**) one or more lock statuses for style elements of a visual style. The server **100** may receive the lock statuses from the client device **200** that displays the style user interfaces **400** or **500**. The lock status may be received as separate information (e.g., an update for the lock status), as data corresponding to an updated visual style with the updated lock status included therein, or as data corresponding to an updated style set that includes the updated visual style. The server **100** stores (**604**) style data with the received lock statuses. As described above, the style data may be stored as a file or in the version control system. The server **100** stores (**606**) document content data and document support data for an electronic document separately from the style data. The electronic document includes a reference to the stored style data. Upon a request for the electronic document by the client device **200**, the server **100** sends (**608**) the document content data, the document support data, and the style data to the client device **200**. The client device **200** renders the electronic document for viewing or editing based on the document content data, the document support data, and the style data. In alternative embodiments, the user may request a non-editable version of the electronic document, such as an image file or portable document format ("PDF") file. In this case, the server **100** generates the non-editable document based on the document content data, the document support data, and the style data.

FIG. **7** and FIG. **8** are diagrams illustrating a document user interface **700** provided by the system **10** for using a visual style set for an electronic document, according to an embodiment. While the style user interfaces **400** and **500** are used for viewing and modifying a visual style or style guide, the document user interface **700** is used for viewing and modifying an electronic document. The client device **200** displays the document user interface **700** based on the document content data, the document support data, and the style data received from the server **100**. The document user interface **700** includes a style editing portion **710**, a style selection indicator **712**, and a document display portion **720**. The client device **200** renders the document content data based on the style data and displays the document content in the document display portion **720**.

The style selection indicator **712** indicates a currently selected visual style of a visual style set. While the style selection indicator **712** is shown as a drop-down box, other implementations such as toggle buttons may also be used. In other embodiments, the style selection indicator **712** may be implemented as a dialog box that shows a plurality of visual styles of the visual style set. In this case, the user may more easily recognize that multiple styles are selected for a particular document content element and to change those selected visual styles. The document user interface **700** in one example allows a user to toggle between a drop-down box or dialog box for the style selection indicator **712**, or alternatively, to make the drop-down box or dialog box "sticky" on the document user interface **700**. In this case, the user may select or move the dialog box to more easily view multiple styles while viewing a document content element, such as in a table of a document. The user may change the selected visual style by clicking or interacting with the style selection indicator **712**. As shown in FIG. **7**, clicking on the style selection indicator **712** causes the client device **200** to display a set of selection indicators **713** for visual styles of the visual style set. Selecting another visual style (e.g., Heading 1) changes the visual style associated with a portion of the document content. Referring to FIG. **8**, the visual style Heading 1 has been selected and a portion of the document content (i.e., "Example Title") has been updated to be displayed based on the Heading 1 visual style. Where multiple styles are selected for a same document content element, the style selection indicator **712** may provide a visual indication of the selected styles, for example, using check boxes, highlighting of the selected visual styles, or other indications, as will be apparent to those skilled in the art.

The style editing portion **710** allows for editing the visual characteristics of the document content based on the selected visual style. As shown in FIG. **7** and FIG. **8**, the style editing portion **710** may be implemented as a toolbar with one or more selection indicators (e.g., buttons or drop-down boxes) that correspond to the style elements of the visual styles. In other embodiments, the style editing portion **710** may be implemented as a dialog box. The document user interface **700** in one example allows the user to toggle between the drop-down box or dialog box for the style editing portion **710** or make either "sticky" on the document user interface **700**. The style editing portion **710** allows the user to view and modify unlocked style elements, and to view but not modify the locked style elements. As shown in FIG. **7** and FIG. **8**, the selection indicators corresponding to locked style elements are displayed as "grayed out" or disabled to indicate they cannot be modified, in contrast to an enabled selection indicators. In other implementations, the selection indicator may be displayed with a lock indication (such as a padlock icon). In this implementation, user inputs are controlled by providing a user interface that allows only valid user inputs instead of comparing a received user input with a set of rules to determine whether the input should be performed. In another

implementation, the user interface **700** allows the user to change the style element for locked style elements, but instead provides a notification to the user to indicate that the user is deviating from the visual style set.

In some embodiments, the electronic document may have existing styles applied to the document content. The styles may be implicit (e.g., a paragraph style with bold formatting enabled by default) or explicit (e.g., manually enabled bold formatting). In this case, a locked style element takes precedence over both implicit and explicit formatting. If the style element is unlocked, explicit formatting takes precedence and implicit formatting uses the default value for the style element. Other variations of precedence will be apparent to those skilled in the art. Alternatively, all implicit and explicit style elements in an electronic document may be removed when the style guide is applied.

FIG. **9** is a diagram illustrating a comparison user interface **900** provided by the system **10** for comparing first and second visual style sets, according to an embodiment. When a first visual style set has been changed and saved by a style guide manager (e.g., re-published as a second visual style set), a user of an electronic document that references the first visual style set may receive a prompt (e.g., a pop-up window) for conversion of the electronic document to the second visual style set.

The server **100** in one example determines, for an electronic document associated with the first visual style set, whether the first visual style set corresponds to a second visual style set. In this case, the second visual style set may have an updated version identifier, a higher priority indicator, or other relationship to the first visual style set. The application **210** in this case notifies the user by sending a message or prompting for a style selection based on the first visual style set and the second visual style set. Thus, the user may select which style set should be applied to the electronic document.

The application **210** in one example displays the comparison user interface **900** as the prompt for the style selection. The application **210** generates a first document display portion **910** of the comparison user interface **900** that displays the electronic document based on the first visual style set. The application **210** generates a second document display portion **920** of the comparison user interface **900** that displays the electronic document based on the second visual style set of visual styles, without modification to the association between the electronic document and the first visual style set. The comparison user interface **900** thus displays a preview of the electronic document with a comparison between the first and second visual style sets allowing the user to choose whether to accept the second visual style set. In another embodiment, the comparison user interface **900** uses a single document display portion, but instead toggles the document display portion between the first visual style set and the second visual style set without modification to the association between the electronic document and the first visual style set.

FIG. **10** is another diagram illustrating a document user interface **1000** provided by the system **10** for using a visual style set for an electronic document, according to an embodiment. The document user interface **1000** is used for viewing and modifying an electronic document, analogous to the document user interface **700**, and illustrates row styles and column styles for a table. The document user interface **1000** includes a style selection indicator **1012**, implemented as a dialog box with a plurality of visual styles of a visual style set. The visual style set includes a "Test Column" style, a "Sample Column" style, and an "Average Row" style. The Test Column style, which is applied to a column **1010**, has "right-alignment" as a locked style element. The Sample Column style, which is applied to columns **1012** and **1014**, has "center-alignment" as a locked style element. The Average Row style, which is applied to row **1016**, has "bold" and "italics" formatting as locked style elements. FIG. **10** illustrates a cell **1018** that has been selected within column **1012** and row **1016**. In the example shown, the cell **1018** corresponds to both the Sample Column style and the Average Row style and is displayed with a combination of the locked style elements. Thus, the cell **1018** is displayed with the center-alignment style element (e.g., from the Sample Column style) and the bold and italics formatting style elements (e.g., from the Average Row style).

FIG. **11** is a flowchart **1100** illustrating a method for managing display of electronic documents that may be performed by the system **10** of FIG. **1**, according to an embodiment. The flowchart **1100** in one example is performed upon a request of a user to edit a style guide or visual style set. The server **100** generates (**1102**) a user interface (e.g., style user interface **400** or **500**) for a visual style set of visual styles that affect display of electronic document content. In one example, the style user interface generator **152** generates a display of the user interface as an image and sends the image to the application **210** for display on the client device **200**. In another example, the style user interface generator **152** cooperates with the application **210** to provide the interface as a web-based interface, such as through hypertext markup language (HTML), asynchronous JavaScript and XML (AJAX), or web-based applications (e.g., Adobe Flash or Microsoft Silverlight) as will be apparent to those skilled in the art.

The server **100** receives (**1104**), via the generated user interface, a lock status for a style element of the style element set. For example, when the user changes the lock status of the style element by clicking or interacting with the lock indicator **426**, the changed lock status is sent to the server **100**. In some implementations, the lock status is sent to the server **100** by the application **210**. In other implementations, an indication of a user interaction (e.g., a mouse click on a portion of the user interface) is sent to the server **100** and the server **100** determines that the user interaction corresponds to a change in lock status for a style element. The server **100** stores (**1106**) the visual style set with the changed lock status for the style element. For example, the server **100** may publish the visual style set with a version control system.

FIG. **12** is a flowchart **1200** of a method for managing display of electronic documents in a client-server architecture that may be performed by the system of FIG. **1**, according to an embodiment. The flowchart **1200** in one example is performed upon a request of a user to edit an electronic document. The server **100** generates (**1202**) a document user interface (e.g., the document user interface **700**) for editing an electronic document. As described above with reference to step **1102**, the document user interface may be generated as an image or web-based interface. The electronic document is associated with a visual style set of visual styles. In the example shown in FIG. **7**, the visual style set includes Body Text, Heading 1, Heading 2, Heading 3, Heading 4, and Heading 5 visual styles.

The server **100** receives (**1204**) an edit request for a selected visual style of the visual style set. The server **100** generates (**1206**) the style editing portion **710** of the document user interface for editing the selected visual style. The client device **200** displays (**1208**) the document user interface with the style editing portion to the user of the electronic document. The server **100** generates the style editing portion based on a lock status set of lock statuses. The lock status set corresponds to the style element set for the selected visual style.

When generating or updating the style editing portion **710**, the server **100** generates an enabled element editing portion for each style element of the style element set with a lock status that indicates the style element is editable by the user of the electronic document. The server **100** generates the style editing portion with a disabled element editing portion for each style element of the style element set with a lock status that indicates the style element is non-editable by the user of the electronic document. For example, a bold formatting style element of the style element set with a lock status of "unlocked" may be generated as an enabled "Bold" button as the enabled element editing portion. A locked italics formatting style element may be generated as a disabled "Italics" button, as will be appreciated by those skilled in the art.

The edit request may correspond to a user interaction (e.g., a button press or mouse click) with the style editing portion **710**, such as clicking an enabled "Bold" button to toggle the bold formatting of a document content element. In this case, the server **100** updates the style editing portion **710** as the step of generation (**1206**). In another example, the server **100** updates the style editing portion **710** when the user of the electronic document selects a different document content element. In this case, the edit request indicates the selection of the different document content element. While the user may change unlocked style elements that are applied to a document content element, these changes do not change the visual style itself, as will be appreciated by those skilled in the art.

FIG. **13** is a flowchart **1300** of another method for managing display of electronic documents in a client-server architecture that may be performed by the system of FIG. **1**, according to an embodiment. As described above, the visual style set maintenance process **120** in one example provides a version control system. The document support data for an electronic document includes a reference or link to a visual style set or style guide. The user may update the style guide over time and maintain one or more prior versions of the style guide. The server **100** determines (**1302**), for an electronic document associated with a first visual style set of visual styles (e.g., a first version or priority level), whether the first visual style set corresponds to a second visual style set (e.g., a second version) with a higher priority than the first visual style set. The client device **200** prompts (**1304**) the user of the electronic document for a style selection based on the first visual style set and the second visual style set. For example, the user may be prompted to choose between the first version and the second, higher priority version. This allows the user to prevent undesirable changes in the style of the electronic document. The client device **200** generates (**1306**) a user interface for the electronic document based on the style selection. As described above, the client device **200** may generate the comparison user interface **900** to display a preview of the electronic document with a comparison between the first and second visual style sets allowing the user to choose whether to choose the second visual style set.

FIG. **14** is a diagram illustrating a style user interface **1400**, provided by the system **10** (e.g., via the application **210**) for viewing a visual style set of visual styles (e.g., a "style guide") that affects display of electronic document content, according to an embodiment. The style user interface **1400** includes a style display portion **1410** with a set of selection indicators **1412** for visual styles of a visual style set. In the example shown in FIG. **14**, the visual style set includes Normal, Heading 1, Heading 2, and Heading 3 visual styles. When a visual style is selected (e.g., by clicking on the corresponding selection indicator), the application **210** displays one or more element display portions **1420**. The element display portions **1420** correspond to style elements of a style element set for the selected visual style. As shown in FIG. **14**, the element display portions correspond to the Heading 1 visual style. Each displayed element display portion **1420** includes one or more of a description **1422** or other identifier of the style element, a selection indicator **1424** for a current default value of the style element, and a lock indicator **1426** for a lock status of the style element. The style user interface **1400** may further include a preview display portion **1430** that provides a sample of the selected visual style to a user. The style display portion **1410**, element display portion **1420**, description **1422**, selection indicator **1424**, lock indicator **1426**, and preview display portion **1430** generally correspond to elements **410**, **420**, **422**, **424**, **426**, and **430** as shown in FIG. **4**, respectively, however in the example shown in FIG. **14**, the element display portion **1420** is locked and thus cannot be changed by the user.

FIG. **15** is a diagram illustrating a style user interface **1500**, provided by the system **10** (e.g., via the application **210**) for editing or viewing a visual style set, including table styles, that affects display of electronic document content, according to an embodiment. The style user interface **1500** includes a style display portion **1510** with a set of selection indicators **1512** for visual styles of a visual style set. In the example shown in FIG. **15**, the visual style set includes Table Style 1 and Table Style 2 visual styles. When a visual style is selected (e.g., by clicking on the corresponding selection indicator), the application **210** displays one or more element display portions **1520**. The element display portions **1520** correspond to style elements of a style element set for the selected visual style. Each displayed element display portion **1520** includes one or more of a description **1522** or other identifier of the style element, a selection indicator **1524** for a current default value of the style element, and a lock indicator **1526** for a lock status of the style element. The style user interface **1500** may further include a preview display portion **1530** that provides a sample of the selected visual style to a user. The style display portion **1510**, element display portion **1520**, description **1522**, selection indicator **1524**, lock indicator **1526**, and preview display portion **1530** operate similarly to elements **410**, **420**, **422**, **424**, **426**, and **430** as shown in FIG. **4**, respectively, and thus their description is omitted. Examples of the table style elements include number indicators for header rows, header columns, and footer rows, table borders, table fill (e.g., fill color and fill pattern), cell fill, cell border, text position within a cell, font styles (e.g., based on paragraph styles), and font size adjustments. Additional style elements will be apparent to those skilled in the art.

FIG. **16** is a diagram illustrating a style user interface **1600**, provided by the system **10** (e.g., via the application **210**) for editing or viewing a visual style set, including a footnote style, that affects display of electronic document content, according to an embodiment. The style user interface **1600** includes a single footnote style of the visual style set and displays one or more element display portions **1620** and a preview display portion **1630**. The element display portion **1620** and preview display portion **1630** operate similarly to elements **420** and **430** as shown in FIG. **4**, respectively, and thus their description is omitted. Examples of the footnote style elements include font, font size, font color, emphasis formatting, alignment, footnote number formatting, and footnote spacing. Additional style elements will be apparent to those skilled in the art.

FIG. **17** and FIG. **18** are diagrams illustrating style user interfaces **1700** and **1800**, provided by the system **10** (e.g., via the application **210**) for editing or viewing a visual style set, including bulleted list styles and numbered list styles, that affects display of electronic document content, according to an embodiment. The style user interfaces **1700** and **1800**

include a style display portion **1710** with a set of selection indicators **1712** for visual styles of a visual style set. In the example shown in FIGS. **17** and **18**, the visual style set includes Numbers 1 and Numbers 2 as default numbered list styles and Custom Numbers 1 and Custom Bullets 1 as a user-created numbered list visual style and a user-created bulleted list visual style, respectively. When a visual style is selected (e.g., by clicking on the corresponding selection indicator), the application **210** displays one or more element display portions **1720**. The element display portion **1720** as shown in FIG. **17** is displayed for the Custom Bullets 1 visual style and includes a single lock indicator **1726** for multiple style elements that define a bullet series, including descriptions **1722** and selection indicators **1724** for bullet shape, size, left indent, hanging indent, and bullet color. The style user interface **1700** allows the user to create an additional bullet row or delete existing bullet rows using button **1728** or buttons **1729**, respectively. The style user interface **1700** may further include a preview display portion **1730** that provides a sample of the selected visual style to a user. The element display portion **1820** as shown in FIG. **18** is displayed for the Custom Bullets 1 visual style and includes a single lock indicator **1826** for multiple style elements that define spacing of the bullet series, including line spacing within a bullet, line spacing before the bullet series, line spacing before a bullet item, line spacing after a bullet item, and line spacing after the bullet series. The style display portion **1710**, element display portions **1720** and **1820**, descriptions **1722** and **1822**, selection indicators **1724** and **1824**, lock indicators **1726** and **1826**, and preview display portion **1730** operate similarly to elements **410**, **420**, **426**, and **430** as shown in FIG. **4**, respectively, and thus their description is omitted.

FIG. **19** and FIG. **20** are diagrams illustrating style user interfaces **1900** and **2000**, provided by the system **10** (e.g., via the application **210**) for viewing a visual style set of visual styles, including bulleted list styles and numbered list styles, that affects display of electronic document content, according to an embodiment. The style user interfaces **1900** and **2000** include a style display portion **1910** with a set of selection indicators **1912** that corresponds to the visual style set of FIGS. **17** and **18**. FIG. **19** illustrates an element display portion **1920** that corresponds to the Custom Bullets 1 visual style and provides descriptions **1922** of the style elements for the bullet series shown in FIG. **17**, selection indicators **1924** for current default values of the style elements, and a lock indicator **1926** for a lock status of the style element. The style user interface **1900** further includes a preview display portion **1930** that provides a sample of the Custom Bullets 1 visual style to a user. FIG. **20** illustrates an element display portion **2020** that corresponds to the Custom Bullets 1 visual style and provides descriptions **2022** of the style elements for the spacing style elements shown in FIG. **18**, selection indicators **2024** for current default values of the spacing style elements, and a lock indicator **2026** for a lock status of the spacing style elements. The style user interface **2000** further includes the preview display portion **1930** that provides a sample of the Custom Bullets 1 visual style to a user. The style display portion **1910**, element display portions **1920** and **2020**, descriptions **1922** and **2022**, selection indicators **1924** and **2024**, lock indicators **1926** and **2026**, and preview display portion **1930** operate similarly to elements **410**, **420**, **422**, **424**, **426**, and **430** as shown in FIG. **4**, respectively, however in the examples shown in FIGS. **19** and **20**, the element display portions **1920** and **2020** are locked and thus cannot be changed by the user.

It can be seen from the foregoing that a method and apparatus for controlling visual formatting of an electronic document has been described. In view of the many possible embodiments to which the principles of the present discussion may be applied, it should be recognized that the embodiments described herein with respect to the drawing figures are meant to be illustrative only and should not be taken as limiting the scope of the claims. Therefore, the techniques as described herein contemplate all such embodiments as may come within the scope of the following claims and equivalents thereof.

All references, including publications, patent applications, and patents, cited herein are hereby incorporated by reference to the same extent as if each reference were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

For the purposes of promoting an understanding of the principles of the invention, reference has been made to the embodiments illustrated in the drawings, and specific language has been used to describe these embodiments. However, no limitation of the scope of the invention is intended by this specific language, and the invention should be construed to encompass all embodiments that would normally occur to one of ordinary skill in the art. The terminology used herein is for the purpose of describing the particular embodiments and is not intended to be limiting of exemplary embodiments of the invention. In the description of the embodiments, certain detailed explanations of related art are omitted when it is deemed that they may unnecessarily obscure the essence of the invention.

The apparatus described herein may comprise a processor, a memory for storing program data to be executed by the processor, a permanent storage such as a disk drive, a communications port for handling communications with external devices, and user interface devices, including a display, touch panel, keys, buttons, etc. When software modules are involved, these software modules may be stored as program instructions or computer readable code executable by the processor on a non-transitory computer-readable media such as magnetic storage media (e.g., magnetic tapes, hard disks, floppy disks), optical recording media (e.g., CD-ROMs, Digital Versatile Discs (DVDs), etc.), and solid state memory (e.g., random-access memory (RAM), read-only memory (ROM), static random-access memory (SRAM), electrically erasable programmable read-only memory (EEPROM), flash memory, thumb drives, etc.). The computer readable recording media may also be distributed over network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion. This computer readable recording media may be read by the computer, stored in the memory, and executed by the processor.

Also, using the disclosure herein, programmers of ordinary skill in the art to which the invention pertains may easily implement functional programs, codes, and code segments for making and using the invention.

The invention may be described in terms of functional block components and various processing steps. Such functional blocks may be realized by any number of hardware and/or software components configured to perform the specified functions. For example, the invention may employ various integrated circuit components, e.g., memory elements, processing elements, logic elements, look-up tables, and the like, which may carry out a variety of functions under the control of one or more microprocessors or other control devices. Similarly, where the elements of the invention are implemented using software programming or software elements, the invention may be implemented with any programming or scripting language such as C, C++, JAVA®, assembler, or the like, with the various algorithms being

implemented with any combination of data structures, objects, processes, routines or other programming elements. Functional aspects may be implemented in algorithms that execute on one or more processors. Furthermore, the invention may employ any number of conventional techniques for electronics configuration, signal processing and/or control, data processing and the like. Finally, the steps of all methods described herein may be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context.

For the sake of brevity, conventional electronics, control systems, software development and other functional aspects of the systems (and components of the individual operating components of the systems) may not be described in detail. Furthermore, the connecting lines, or connectors shown in the various figures presented are intended to represent exemplary functional relationships and/or physical or logical couplings between the various elements. It should be noted that many alternative or additional functional relationships, physical connections or logical connections may be present in a practical device. The words "mechanism", "element", "unit", "structure", "means", and "construction" are used broadly and are not limited to mechanical or physical embodiments, but may include software routines in conjunction with processors, etc.

The use of any and all examples, or exemplary language (e.g., "such as") provided herein, is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention unless otherwise claimed. Numerous modifications and adaptations will be readily apparent to those of ordinary skill in this art without departing from the spirit and scope of the invention as defined by the following claims. Therefore, the scope of the invention is defined not by the detailed description of the invention but by the following claims, and all differences within the scope will be construed as being included in the invention.

No item or component is essential to the practice of the invention unless the element is specifically described as "essential" or "critical". It will also be recognized that the terms "comprises," "comprising," "includes," "including," "has," and "having," as used herein, are specifically intended to be read as open-ended terms of art. The use of the terms "a" and "an" and "the" and similar referents in the context of describing the invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless the context clearly indicates otherwise. In addition, it should be understood that although the terms "first," "second," etc. may be used herein to describe various elements, these elements should not be limited by these terms, which are only used to distinguish one element from another. Furthermore, recitation of ranges of values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein, and each separate value is incorporated into the specification as if it were individually recited herein.

We claim:

1. A method for managing display of electronic documents, comprising:

generating a user interface for a visual style set of visual styles that affect display of electronic document content, wherein a visual style of the visual style set comprises a style element set of style elements;

receiving, via the user interface, a lock status corresponding individually to a style element of the style element set, wherein the lock status indicates whether the corresponding style element is editable or non-editable by a user of an electronic document associated with the visual style set; and

storing the visual style set with the lock status for the corresponding style element.

2. The method of claim **1**, wherein generating the user interface comprises:

generating an element display portion of the user interface that displays a description, a selection indicator, and a lock indicator that correspond to the style element;

wherein the selection indicator corresponds to a default value for the style element, wherein the default value is user-editable via the element display portion;

wherein the lock indicator corresponds to the lock status for the corresponding style element, wherein the lock status is user-editable via the element display portion.

3. The method of claim **2**, wherein the style element corresponds to one of a font face, font size, font color, emphasis format, alignment, spacing, border, or background color for the visual style.

4. The method of claim **2**, wherein generating the user interface comprises:

generating a preview display portion of the user interface that displays a document content element based on a current selection indicator for each style element of the style element set.

5. The method of claim **2**, further comprising:

generating a description display portion that displays a use description for the visual style, wherein the use description is user-editable via the description display portion.

6. The method of claim **2**, wherein the user interface comprises a style user interface, the method further comprising:

generating a document user interface for an electronic document associated with the visual style set;

wherein the document user interface comprises a document display portion that displays the electronic document based on the visual style set.

7. The method of claim **2**, wherein storing the visual style set comprises:

publishing the visual style set with a version control system;

notifying the user of the electronic document associated with the visual style set.

8. The method of claim **2**, wherein the visual style set comprises at least one of a table style, row style, column style, numbered list style, or bulleted list style.

9. A method for managing display of electronic documents in a client-server architecture, comprising:

on the server:

generating a document user interface for editing an electronic document, wherein the electronic document is associated with a visual style set of visual styles;

receiving an edit request for a selected visual style of the visual style set, wherein the selected visual style comprises a style element set of style elements;

generating a style editing portion of the document user interface, for editing the selected visual style, based on a lock status set of lock statuses that corresponds to the style element set, wherein each lock status of the lock status set corresponds individually to a style element of the style element set;

providing the document user interface with the style editing portion to the client for a user of the electronic document.

10. The method of claim **9**, wherein generating the style editing portion comprises:

generating an enabled element editing portion for each style element of the style element set with a corresponding lock status of the lock status set that indicates the style element is editable by the user of the electronic document.

11. The method of claim **10**, wherein generating the style editing portion comprises:

generating the style editing portion with a disabled element editing portion for each style element of the style element set with a corresponding lock status of the lock status set that indicates the style element is non-editable by the user of the electronic document.

12. The method of claim **9**, wherein generating the document user interface comprises:

generating a style display portion of the document user interface that displays a selection indicator set of selection indicators that corresponds to the visual style set.

13. The method of claim **12**, wherein the style display portion displays, upon a mouse-hover event for a selection indicator of the selection indicator set, a use description associated with a visual style of the visual style set that corresponds to the selection indicator.

14. The method of claim **9**, further comprising:

on the server:

storing style data for the visual style set of visual styles that affect display of document content of the electronic document, wherein each lock status of the lock status set indicates whether the corresponding style element of the style element set is editable or non-editable;

storing, for the electronic document, document content data and document support data, wherein the document support data comprises a reference to the visual style set;

wherein generating the document user interface comprises generating the document user interface based on the document content data, the document support data, and the style data.

15. The method of claim **14**, wherein storing the document content data and the document support data comprises:

storing the document content data and the document support data separately from the style data.

16. A method for managing display of electronic documents in a client-server architecture, comprising:

on the server:

determining, for an electronic document associated with a first visual style set of visual styles that affect display of electronic document content, whether the first visual style set corresponds to a second visual style set of visual styles with a higher priority than the first visual style set, wherein a visual style of the first visual style set and a corresponding visual style of the second visual style set are associated with a same electronic document content element of the electronic document, wherein a visual style of the first visual style set comprises a style element set of style elements, wherein a lock status corresponds individually to a style element of the style element set, wherein the lock status indicates whether the corresponding style element is editable or non-editable by a user of the electronic document;

providing a first user interface to the client that prompts the user of the electronic document for a selection of a visual style set based on the first visual style set and the second visual style set;

providing a second user interface, to the client, for the electronic document based on the selected visual style set.

17. The method of claim **16**, wherein providing the first user interface comprises:

generating a comparison user interface for the electronic document;

generating a first document display portion of the comparison user interface that displays the electronic document based on the first visual style set;

generating a second document display portion of the comparison user interface that displays the electronic document based on a second visual style set of visual styles, without modification to the association between the electronic document and the first visual style set; and

providing the comparison user interface to the client for display to the user of the electronic document.

18. The method of claim **16**, wherein providing the second user interface comprises:

generating a comparison user interface for the electronic document;

generating a document display portion of the comparison user interface that displays a first view of the electronic document based on the first visual style set or a second view of the electronic document based on the second visual style set, wherein the comparison user interface allows toggling of the document display portion between the first view and the second view without modification to the association between the electronic document and the first visual style set; and

providing the comparison user interface to the client for display to the user of the electronic document.

19. A server for managing display of electronic documents comprising:

a memory;

a server processor that comprises:

a style user interface generator that generates a style user interface for a visual style set of visual styles that affect display of electronic document content, wherein a visual style of the visual style set comprises a style element set of style elements;

a document user interface generator that generates a document user interface for editing an electronic document, wherein the electronic document is associated with the visual style set;

wherein the style user interface generator generates an element display portion for a style element of the style element set that corresponds individually to a user-editable lock status;

wherein the document user interface generator generates a style editing portion of the document user interface, for editing the visual style, based on the user-editable lock status that corresponds to the style element.

20. The server of claim **19**, wherein the style user interface generator generates the element display portion with a description, a selection indicator, and a lock indicator that correspond to the style element, wherein the lock indicator corresponds to the user-editable lock status that corresponds to the style element.

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